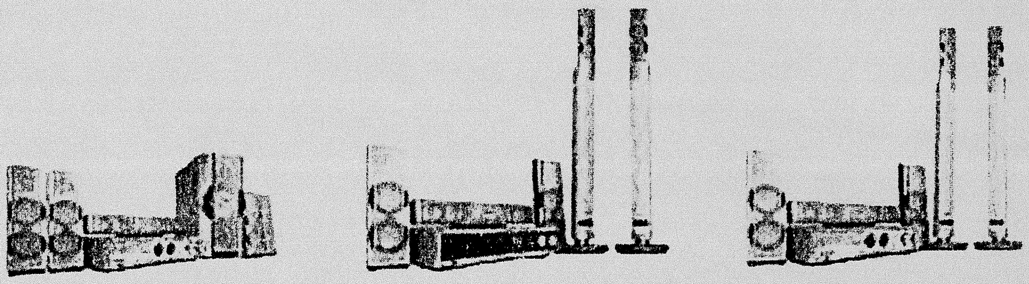
DVD Receiver

MX5500D/21S/37 & MX5600D/37
MX5700D/21R/21S/22S/25S

Service
Service
Service



Service Manual

MP3-CD PLAYBACK MP3

COMPACT disc DIGITAL AUDIO

DVD VIDEO

COMPACT disc DIGITAL VIDEO

TABLE OF CONTENTS

Page
Location of pc boards & Version variations 1-2
Technical Specifications 1-3
Measurement setup 1-4
Service Aids, Safety Instruction, etc. 1-5
Disassembly Instructions & Service positions 2-1
Service Test Programs 3-1
Region codes setting, software upgrades, etc 3-3
Set Block diagram & Wiring diagram 4
PCMCIA board 5
Front Board 6
ECO6 Tuner Board: System Non-Cenelec 7A
System Cenelec 7B
Power Module PWR207 8
AV Board 9
5DTC Module 10
CD222 FE (Front End) Board 11
CD222 BE (Back End) Board 12
Set Mechanical Exploded view & parts list 13
History 14

CLASS 1
LASER PRODUCT

© Copyright 2003 Philips Consumer Electronics B.V. Eindhoven, The Netherlands
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.

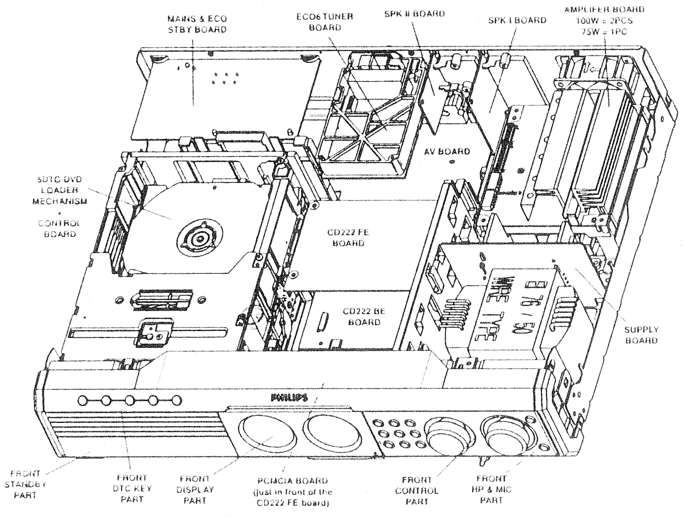
Published by KC 0329 Service Audio Printed in The Netherlands Subject to modification

GB 3139 785 30211

Version 1.1

PHILIPS

LOCATION OF PC BOARDS


MAINS & ECO STBY BOARD
ECO6 TUNER BOARD
SPK II BOARD
SPK I BOARD
AMPLIFER BOARD 100W = 2PCS 75W = 1PC
AV BOARD
50TC-DVD LOADER MECHANISM + CONTROL BOARD
CD222 FE BOARD
CD222 BE BOARD
SUPPLY BOARD
PHILIPS
FRONT STANDBY PART
FRONT DTC KEY PART
FRONT DISPLAY PART
PCMCIA BOARD (just in front of the CD222 FE board)
FRONT CONTROL PART
FRONT HP & MIC PART

VERSION VARIATIONS:

Type /Versions:	MX5500D				MX5600D		MX5700D			
Features & Board in used:	/21S	/33S	/35S	/37		/37	/21R	/21S	/22S	/25S
Karaoke	-	x		-		-	x	x	-	-
RDS + News	-	-		-		-	-	-	x	x
Pro-Scan	x	x		x		x	x	x	-	-
PCMCIA (Media Slot)	x	x		x		x	x	x	x	x
Standby - Clock Display	x	x		x		x	x	x	x	x
ECO Standby - No Display	x	x		x		x	x	x	x	x
Voltage Selector	x	-		-		-	x	x	-	-
Digital In / Out	x	x		x		x	x	x	x	x
Aux Input	x	x		x		x	x	x	x	x
TV Input	x	x		x		x	x	x	x	x
Line Output	x	x		x		x	x	x	x	x
SCART output	-	-		-		-	-	-	x	x
Pr, Pb & Y Outputs	x	x		x		x	x	x	-	-
CVBS Output	x	x		x		x	x	x	x	x
S-Video Output	x	x		x		x	x	x	x	x
Headphone Socket	x	x		x		x	x	x	x	x
Mono BE board - CD222 P	-	-		-		-	-	-	-	-
Mono BE board - CD222 PM	-	-		x		x	-	-	x	x
Mono BE board - CD222 PMK	x	x		-		-	x	x	-	-
Tuner board - ECO6 System non-Cenelec	x	x		x		x	x	x	-	-
Tuner board - ECO6 System Cenelec	-	-		-		-	-	-	x	x
75W 6-Ch (Single SW) with 1x Amplifier pcb	x	x		-		-	-	-	-	-
75W 7-Ch (Twin SW) with 1x Amplifier pcb	-	-		-		x	-	-	-	-
100W 6-Ch (Single SW) with 2x Amplifier pcb	-	-		x		-	-	-	-	-
100W 7-Ch (Twin SW) with 2x Amplifier pcb	-	-		-		x	x	x	x	x

SPECIFICATIONS

GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21..
120V for /37
240V for /25S
220-230V for /22S/33S
Mains frequency : 50/60Hz
Power consumption : < 0,5W at ECO Standby
< 20W Standby (clock on, demo off)
Clock accuracy : < 4 seconds per day
Dimension centre unit : 435 x 100 x 360mm

TUNER:

FM

Tuning range : 87.5-108MHz
Grid : 50kHz for /21../22S/25S/33S
100kHz for /21../37
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75Ω coaxial
Sensitivity at 26dB S/N : < 7μV
Selectivity at 600kHz bandwidth : > 25dB
Image rejection : > 25dB
Distortion at RF=1mV, dev. 75kHz : < 3%
-3dB Limiting point : < 8μV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

Tuning range : 531-1602kHz for /21../22S/25S/33S
530-1700kHz for /21../37
Grid : 9kHz for /21../22S/25S/33S
10kHz for /21../37
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.0mV/M
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5%

AMPLIFIER:

Output power for **75W versions** (MX5500D/21S/33S)
Stereo mode (DIN) : 2 x 75W RMS [3]
Surround mode [1] : 75W RMS/channel
Output power for **100W versions** (other versions)
Stereo mode (DIN) : 2 x 100W RMS [3] / 2 x 80W FTC [2]
Surround mode [1] : 100W RMS/channel
Frequency response ±3dB : 20Hz-20kHz
Hum (minimum volume) : 200nW
Residue noise (min, volume) : 40nW
Digital Sound Control : Stereo, 3D Sound, Multi modes [4]
Bass & Treble : -3 to +3 [4]
Input sensitivity
TV-in : 350mV ± 3dB
Aux-in : 880mV ± 2dB
Output sensitivity
Line out : 600mV ± 2dB at 47kΩ
Headphone (vol. max.) : 660mV ± 2dB at 32Ω

COMPACT DISC/VCD/DVD:

Video Decoding : MPEG-2 / MPEG-1
Video DAC : 10 Bits
Signal System : PAL / NTSC
Video Format : 4:3 / 16:9
MP3-CD bit rate [5] : 32-256 kbs,variable bitrates
MP3-CD sampling frequencies [5] : 32kHz, 44.1kHz, 48kHz
CBVS out [6]
CVBS level : 1.0 ± 0.1V_{p-p}
Luminance S/N ratio : > 45dB (unweighted)
YUV out [6]
Amplitude : 714mV ± 7mV
S/N ratio : > 50dB (unweighted)
S-Video out [6]
Y level : 1.0 ± 0.1V_{p-p}
Y S/N ratio : > 48dB (unweighted)
C level (burst) : 286mV_{p-p} +1/-4 dB
Digital Out : Coaxial acc IEC61937 / IEC60958
Digital In : Coaxial acc IEC60958

[1] with only channel(s) under meausrement loaded, all other channels are unloaded.

[2] with 8Ω, 120Hz - 12,5kHz & 10% THD for /37

[3] with 8Ω, 1kHz & 10% THD for version other than /37

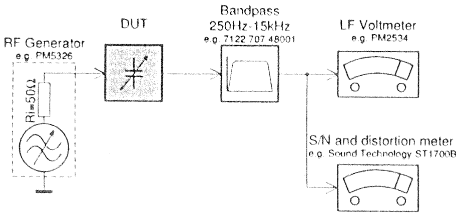
[4] Frequency response in each setting is software controlled.

[5] Recording format: ISO9660, UDF format is not supported.

[6] Output terminals terminated with 75Ω

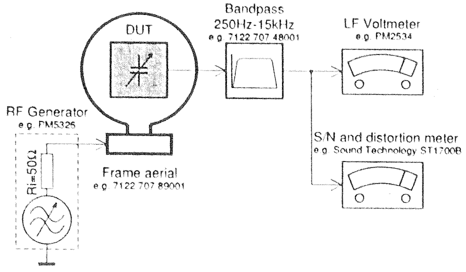
MEASUREMENT SETUP

Tuner FM


RF Generator
e.g. PM5326
Ri=50Ω
DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
S/N and distortion meter
e.g. Sound Technology ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

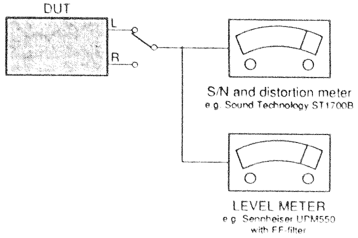
Tuner AM (MW,LW)


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
Frame aerial
e.g. 7122 707 89001
S/N and distortion meter
e.g. Sound Technology ST1700B

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

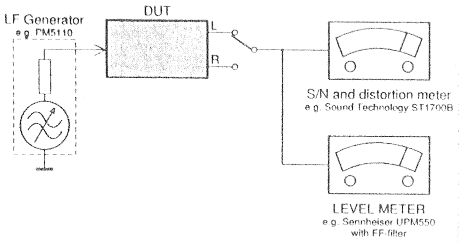
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)


DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071


LF Generator
e.g. PM5110
DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

SERVICE AIDS

Service Tools:

Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6 - T20	4822 395 50145
Torx driver T10 extended	4822 395 50423
Allen key set (1.5, 2, 2.5, 3, 4, 5, 6, 8mm)	5322 395 10754

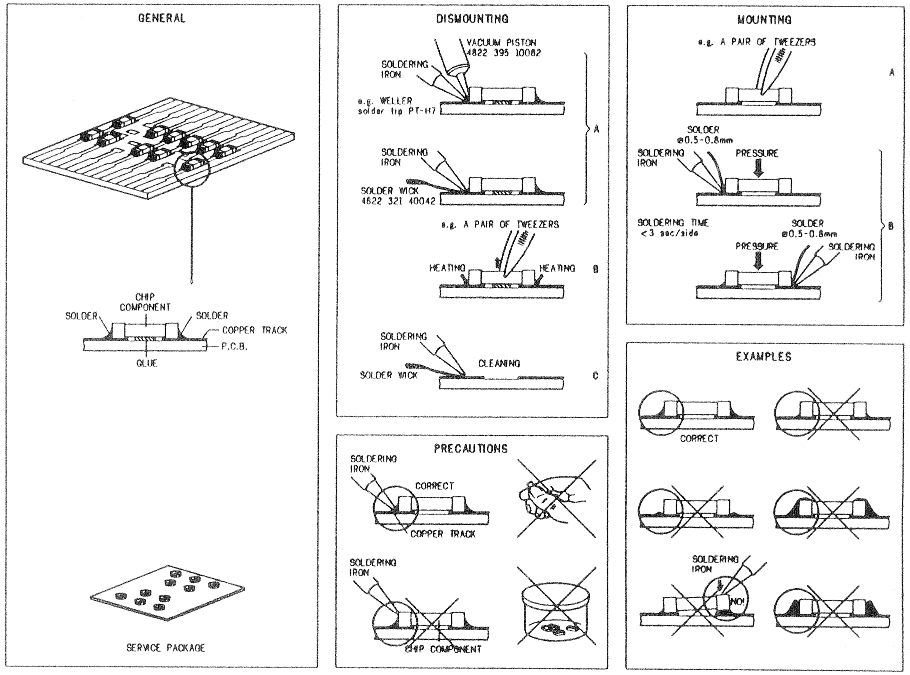
Compact Disc:

SBC426/426A Test disc 5 + 5A	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
SBC444/444A	4822 397 30245
CD-RW Printed Audio Test Disc	7104 099 96611
Dolby Pro-logic Test Disc	4822 395 10216

ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm	4822 466 10953
Anti-static table mat - small 600x650x1.25mm	4822 466 10958
Anti-static wristband	4822 395 10223
Connector box (1MΩ)	4822 320 11307
Extension cable (to connect wristband to conn. box)	4822 320 11305
Connecting cable (to connect table mat to conn. box)	4822 320 11306
Earth cable (to connect product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 320 10671
Wristband tester	4822 344 13999

HANDLING CHIP COMPONENTS


GENERAL
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE
DISMOUNTING
VACUUM PISTON 4822 395 10082
SOLDERING IRON
e.g. WELLER solder tip PT-H7
SOLDERING IRON
SOLDER WICK 4822 321 40042
A
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
SOLDER WICK
CLEANING
C
MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER ⌀0.5-0.8mm
SOLDERING IRON
PRESSURE
SOLDERING TIME <3 sec/side
SOLDER ⌀0.5-0.8mm
PRESSURE
SOLDERING IRON
B
PRECAUTIONS
SOLDERING IRON
CORRECT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT
EXAMPLES
CORRECT
SOLDERING IRON
NO!

ESD

(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(F)

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques a celles spécifiées.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

CLASS 1
LASER PRODUCT
3122 110 03420

(GB) Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(SF) Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

(DK) Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

DISMANTLING INSTRUCTIONS

Dismantling of the Front Panel assembly

1) Loosen the 9 screws to dismantle the Top Cover (pos 252)
   - 2 screws on each side
   - 5 screws on the Rear Panel (pos 251).

2) Loosen 5 screws A and 8 catches C1 to slide the Front Panel assembly (pos 101, 102, 103, etc) as per figure 1.

Note: To remove the Source / Volume control pc board (pos 1105B) 2 nuts hidden below the control knob assembly (pos 133, 134 and 135) must first be removed.

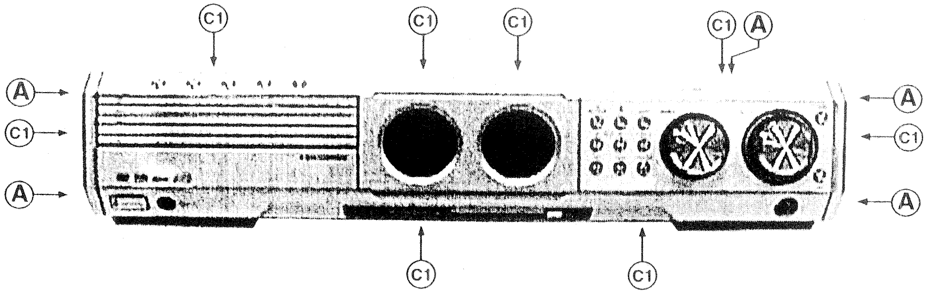

C1
C1
C1
C1
A
A
C1
A
A
C1
A
C1
C1

Figure 1

Hints for re-assembly of Top Cover

Due to appearance design the Top cover (pos 252) is sandwiched between the Front panel (pos 101) and the 2 side covers (pos 102 & 103), this make it necessary to remove the 2 side covers before re-assembly of Top cover.

1) To remove the side cover use a small screw driver with marking 16mm from the tip end.

2) Insert the screw driver into slot (as shown in figure 2) and push the tip outwards to release the side cover catch. The side cover can be pull outwards as soon as the top catch is released.

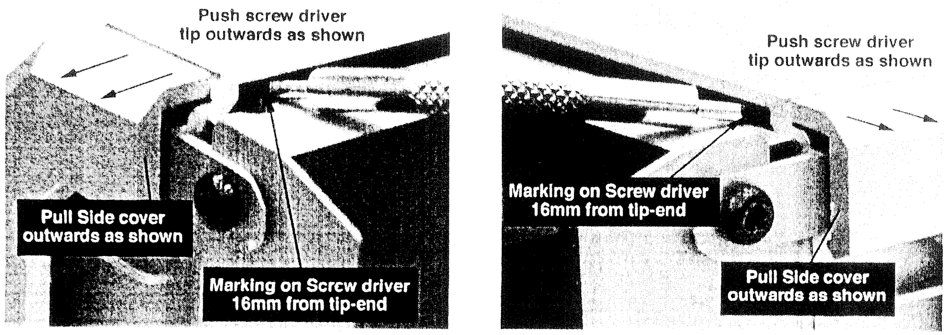

Push screw driver tip outwards as shown
Pull Side cover outwards as shown
Marking on Screw driver 16mm from tip-end
Push screw driver tip outwards as shown
Marking on Screw driver 16mm from tip-end
Pull Side cover outwards as shown

Figure 2

Dismantling the Tuner, Mains and AV boards

1) Loosen 3 screws D and 2 catches C2 on the Rear panel (pos 251) to remove the Tuner board assemby (pos 1101) as pe figure 3.

2) Loosen 1 screws E and 2 catches C3 to unslot the Mains board (pos 1102-A) out of the Rear panel as per figure 4.

3) Loosen bracket (pos 254) by turning a catch, sliding towards the outside and lifting it upwards as per figure 5.

4) Loosen 7 screws F (8 screws for Scart version) and 2 C5 to separate Rear Plate assembly (pos 251 + 227) from the Bottom plate as per figure 3.

5) Uncatch C4 to remove the AV board (pos 1104) from the Bottom & Rear Plate assembly (pos 251 + 227) as per figure 5.

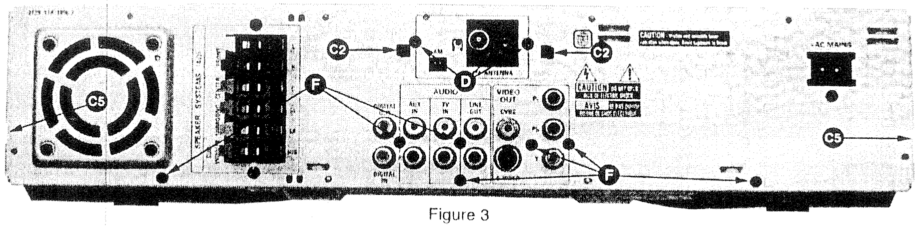

C2
C2
D
F
C5
C5
F

Figure 3

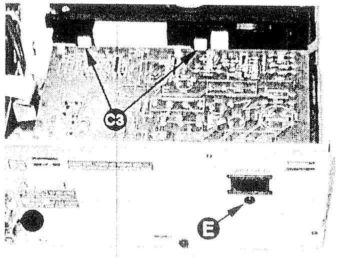


Figure 4

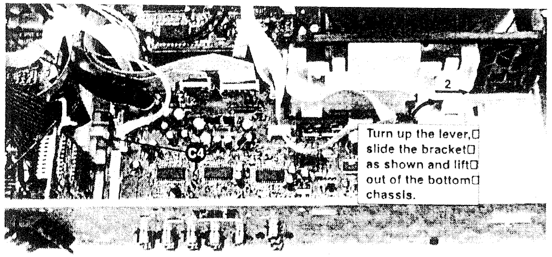

2
C4
Turn up the lever, slide the bracket as shown and lift out of the bottom chassis.

Figure 5

Dismantling the 5DTC Module

1) Loosen 1 screws E and 2 catches C3 to remove the Mains board as per figure 4.

2) Loosen bracket (pos 254) by turning a catch, sliding towards the outside and lifting it upwards as per figure 5.

3) Loosen 3 screws G, lift up the 5DTC Module's (pos 1103-A) rear and pull the module out towards the rear as per figure 6.

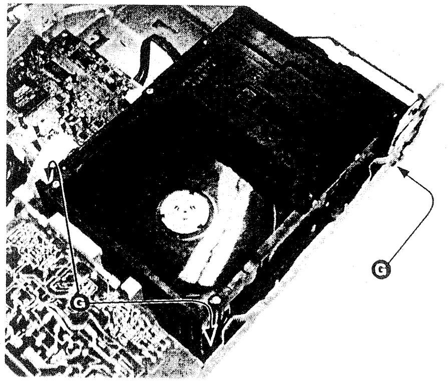


Figure 6

Dismantling the Mono FE and BE boards

1) Loosen 2 screws and 2 catches to remove the Mono BE board (pos 1103-B).

2) Loosen 2 screws and 2 catches to remove the Mono FE board (pos 1103-C).

3) Loosen 2 screws to remove the PCMCIA board (pos 1106).

Dismantling the Supply & Power Amplifier boards

1) Loosen 2 screws B mounting the Supply board's (pos 1102-B) heatsink to the Bottom Plate (pos 227) as per figure 7.

   Note: During re-assembly care must be taken to ensure the Mains Transformer wires to the Supply board is routed properly below the board.

2) Loosen 4 screws C (8 screws for 100W version with 2 pcs of Amplifier boards) to dismantle the Power Amplifier board (pos 1102-D) from the Bottom Plate as per figure 7.

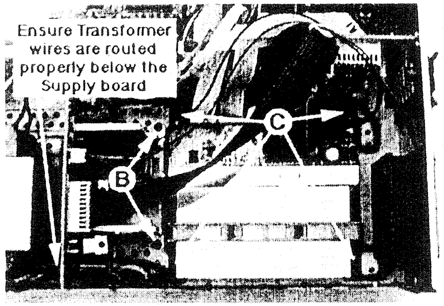
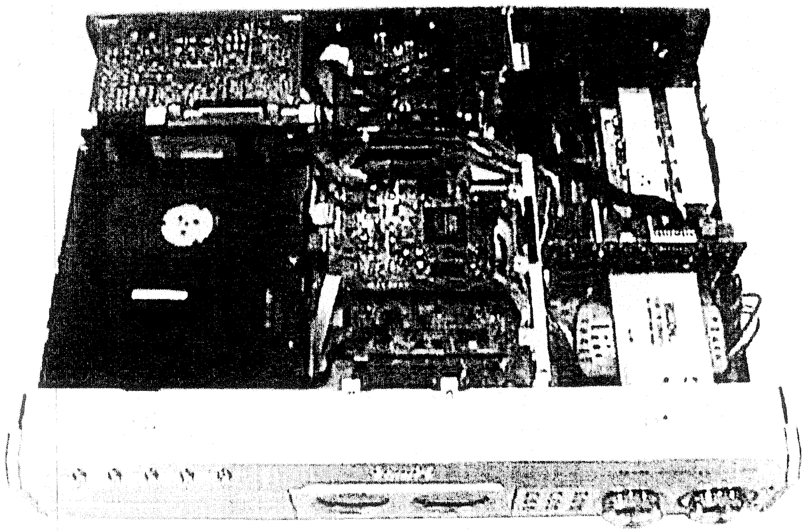

Ensure Transformer wires are routed properly below the Supply board
B
C

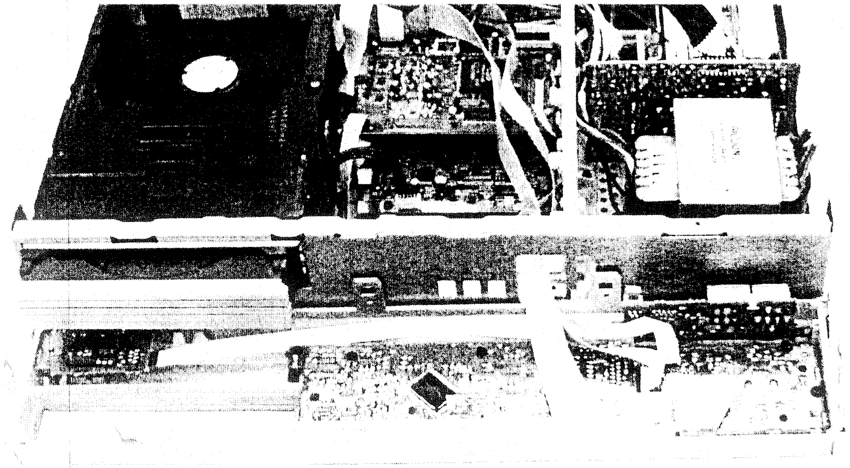
Figure 7

Service positions

Service position A (Top cover removed)

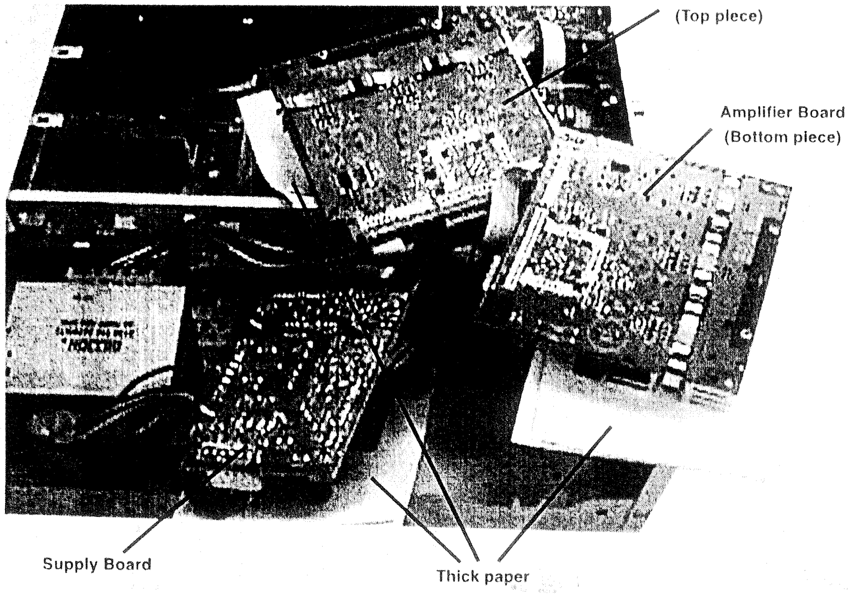


Service position B (Front Panel loosen)



Service positions

Service position C (Supply and Amplifier boards loosen)


Amplifier Board
(Top piece)
Amplifier Board
(Bottom piece)
Supply Board
Thick paper

Caution:

1) In some of the service positions the Mains supply is exposed, therefore service technicians have to exercise care to prevent electric shock.

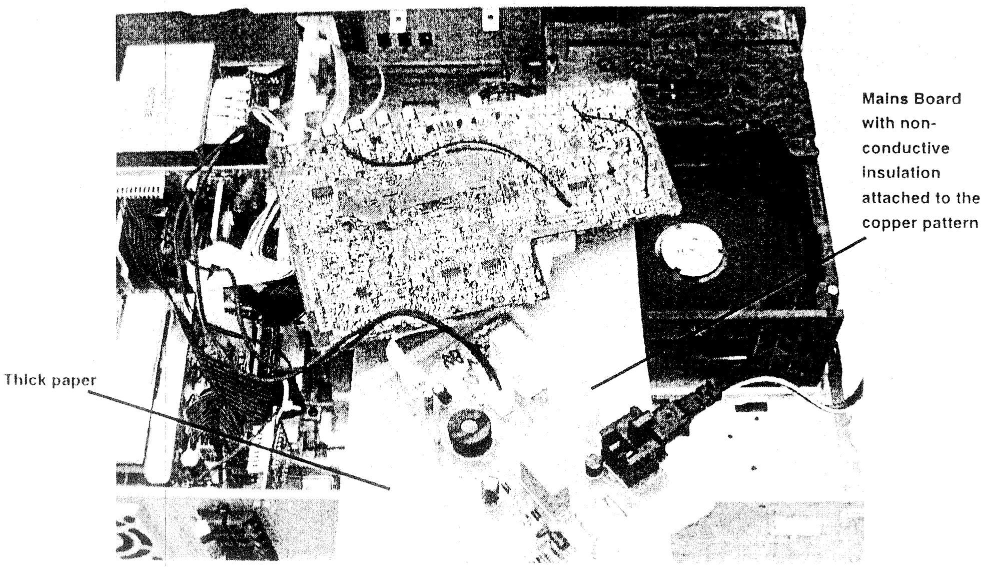
2) The copper pattern on the Mains board should be covered with non-conductive insulation during fault-finding on other parts of the set.

3) Insulation sheet (eg. thick paper or cardboard) should be use during fault-finding to prevent short-circuiting of copper patterns to metallic surroundings.

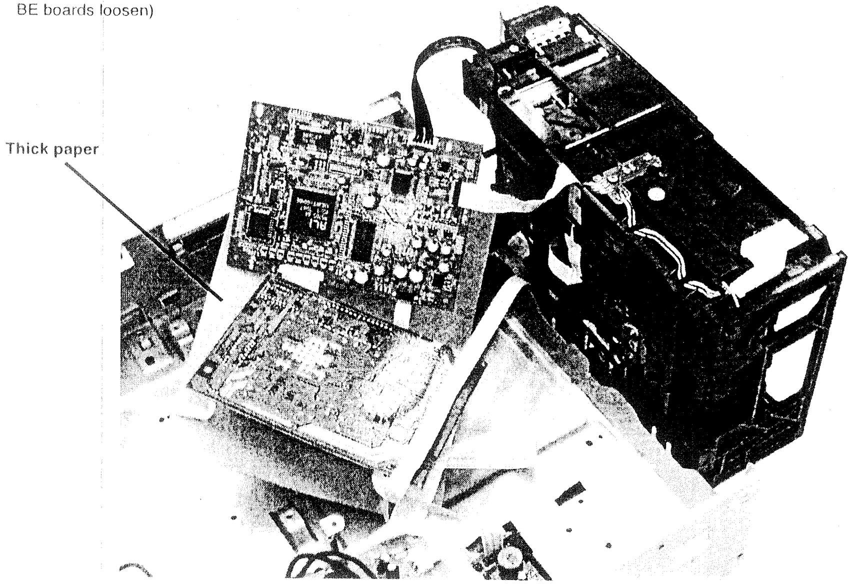
Note:

The ground connection between AV board stoko pin 1100 and Amplifier board stoko pin 1320 must be connected during Service pos C and D in order to have sound output at the Loudspeakers.

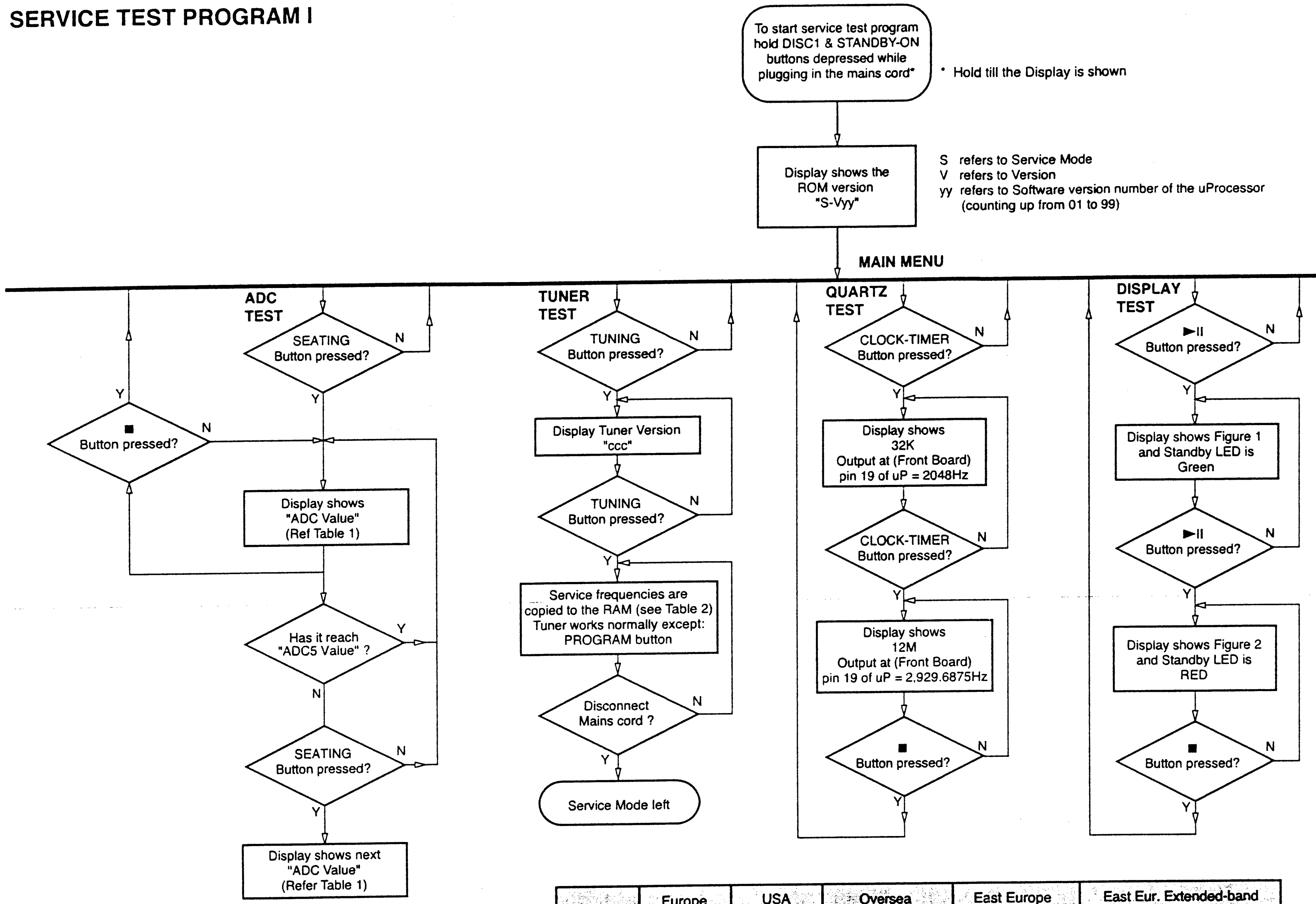
Service position D (Mains & AV boards loosen)


Mains Board
with non-
conductive
insulation
attached to the
copper pattern
Thick paper

Service position E (5DTC Mechanism, Mono FE and Mono BE boards loosen)


Thick paper

SERVICE TEST PROGRAM I


To start service test program hold DISC1 & STANDBY-ON buttons depressed while plugging in the mains cord*
* Hold till the Display is shown
Display shows the ROM version "S-Vyy"
S refers to Service Mode
V refers to Version
yy refers to Software version number of the uProcessor (counting up from 01 to 99)
MAIN MENU
ADC TEST
SEATING Button pressed?
■ Button pressed?
Display shows "ADC Value" (Ref Table 1)
Has it reach "ADC5 Value" ?
SEATING Button pressed?
Display shows next "ADC Value" (Refer Table 1)
TUNER TEST
TUNING Button pressed?
Display Tuner Version "ccc"
TUNING Button pressed?
Service frequencies are copied to the RAM (see Table 2) Tuner works normally except: PROGRAM button
Disconnect Mains cord ?
Service Mode left
QUARTZ TEST
CLOCK-TIMER Button pressed?
Display shows 32K Output at (Front Board) pin 19 of uP = 2048Hz
CLOCK-TIMER Button pressed?
Display shows 12M Output at (Front Board) pin 19 of uP = 2.929.6875Hz
■ Button pressed?
DISPLAY TEST
►II Button pressed?
Display shows Figure 1 and Standby LED is Green
►II Button pressed?
Display shows Figure 2 and Standby LED is RED
■ Button pressed?
Y
N

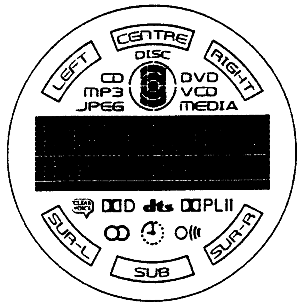

CENTRE
DISC
LEFT
RIGHT
CD
MP3
JPEG
DVD
VCD
MEDIA
DTS
PLII
SUR-L
SUR-R
SUB

Figure 1

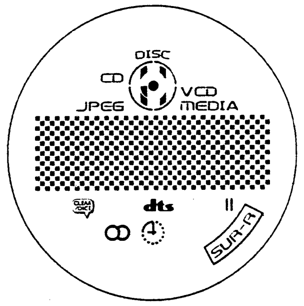

DISC
CD
VCD
JPEG
MEDIA
dts
II
SUR-R

Figure 2

Various other Tests

Name	Input line to uProcessor IC	Remarks
ADC1	Key0	Return the value assign for each key button.
ADC2	Key1	Return the value assign for each key button.
ADC3	VU_IN	Varies according to the signal dc level
ADC4	MUX_DET	The set temperature is measured via this NTC line, if lower than 69 the set goes into Standby.
ADC5	Options	Return the value assign for the different possible options

Table 1

Note:
ADC Test is used for checking the ADC inputs to the microprocessor. The display shows an ADC value between 0 and 255 for an input signal between 0 and 5V.

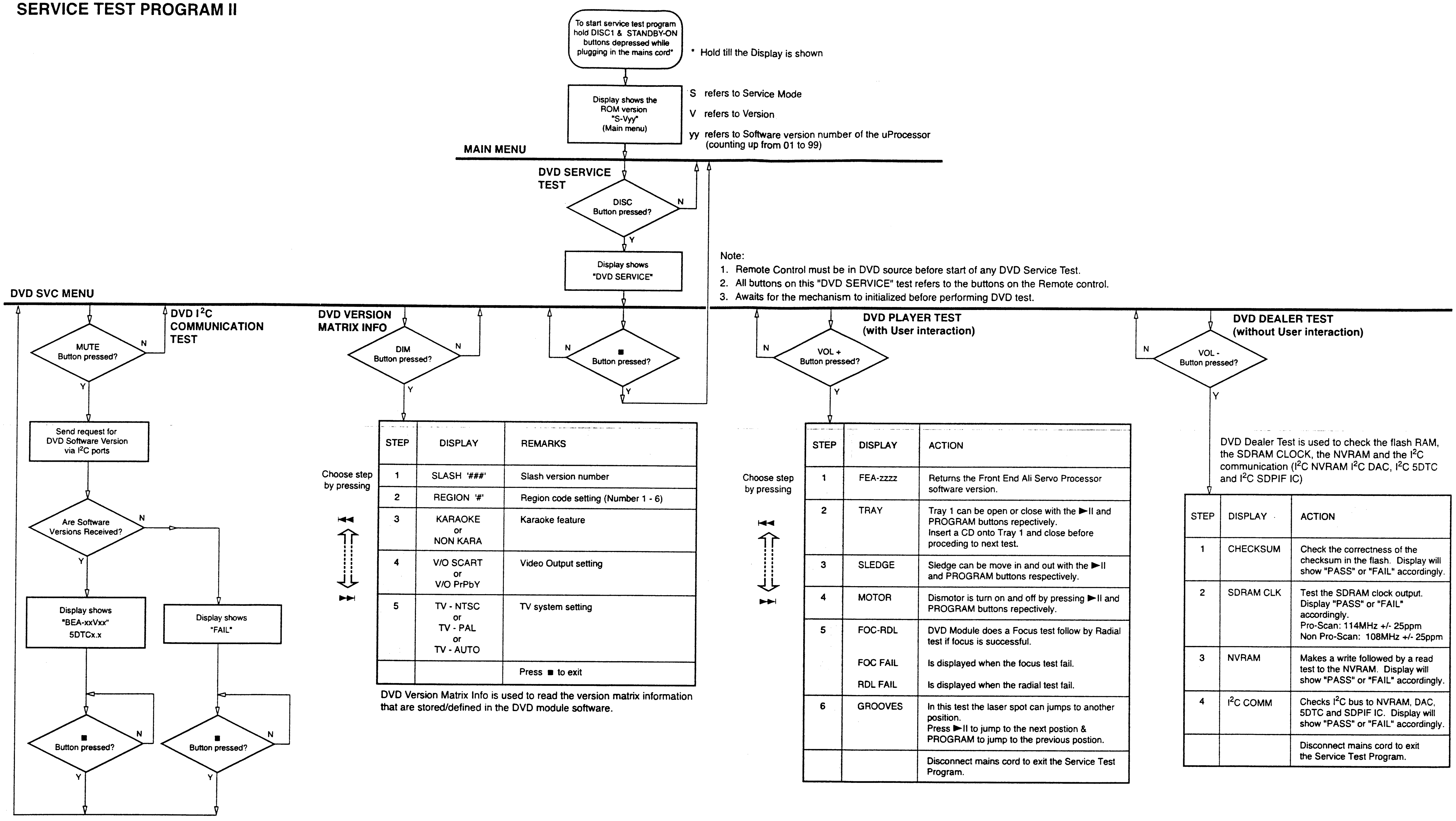
PRESET	Europe "EUR"	USA "USA"	Oversea "OSE"	East Europe "EAS"	East Eur. Extended-band "EAS"
1	87.5MHz	87.5MHz	87.5MHz	87.5MHz	65.81MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	530kHz	530/531kHz*	531kHz	74MHz
4	1602kHz	1700kHz	1700/1602kHz*	1602kHz	87.5MHz
5	558kHz	560kHz	560/558kHz*	558kHz	531kHz
6	1494kHz	1500kHz	1500/1494kHz*	1494kHz	1602kHz
7	87.5MHz	98MHz	98/87.5MHz*	87.5MHz	558kHz
8	87.5MHz	87.5MHz	87.5MHz	87.5MHz	1494kHz
9	87.5MHz	87.5MHz	87.5MHz	87.5MHz	98MHz
10	87.5MHz	87.5MHz	87.5MHz	87.5MHz	70.01MHz
11	98MHz	87.5MHz	87.5/98MHz*	98MHz	65.81MHz

Table 2

Note: * Depending on the selected grid frequency (9 or 10kHz).
By holding the "DISC5" and "STANDBY-ON" buttons depressed while switching on the Mains supply, one of the undermentioned features will be activated:
- the tuning grid frequency is toggled between 9kHz and 10kHz for the Oversea (/21) version.

TEST	Activated with	ACTION
EEPROM TEST	►►I ■ to Exit	Some test patterns will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test patterns correctly, otherwise "FAIL" will be displayed.
EEPROM FORMAT TEST	I◄◄	Load default data. Display shows "NEW" for 1 second. **Caution!** **All presets from the customer will be lost!!**
AUTO STANDBY TOGGLE	SUBW + (Remote Control)	Pressing this button will toggle between the status "AUTO STANDBY ON" and "AUTO STANDBY OFF". The status will scroll once across the Display.
ROTARY ENCODER TEST	SOURCE / VOLUME Knob	Display shows value for 2 seconds. Values increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
LEAVE SERVICE TEST PROGRAM	Disconnect mains cord	

SERVICE TEST PROGRAM II


To start service test program hold DISC1 & STANDBY-ON buttons depressed while plugging in the mains cord*
Display shows the ROM version "S-Vyy" (Main menu)
MAIN MENU
DVD SERVICE TEST
DISC Button pressed?
N
Y
Display shows "DVD SERVICE"
DVD SVC MENU
MUTE Button pressed?
DVD I²C COMMUNICATION TEST
Send request for DVD Software Version via I²C ports
Are Software Versions Received?
Display shows "BEA-xxVxx" 5DTCx.x
Display shows "FAIL"
■ Button pressed?
■ Button pressed?
DVD VERSION MATRIX INFO
DIM Button pressed?
Choose step by pressing
⏮
⏭
■ Button pressed?
DVD PLAYER TEST (with User interaction)
VOL + Button pressed?
Choose step by pressing
⏮
⏭
DVD DEALER TEST (without User interaction)
VOL - Button pressed?

* Hold till the Display is shown

S refers to Service Mode

V refers to Version

yy refers to Software version number of the uProcessor (counting up from 01 to 99)

Note:
1. Remote Control must be in DVD source before start of any DVD Service Test.
2. All buttons on this "DVD SERVICE" test refers to the buttons on the Remote control.
3. Awaits for the mechanism to initialized before performing DVD test.

DVD I²C Communication Test is used to test the I²C communication port between the DVD module and the microprocessor of the set.

where: BEA-xxVxx is the Back End Application software version
5DTCx.x is the 5DTC software version

STEP	DISPLAY	REMARKS
1	SLASH '###'	Slash version number
2	REGION '#'	Region code setting (Number 1 - 6)
3	KARAOKE or NON KARA	Karaoke feature
4	V/O SCART or V/O PrPbY	Video Output setting
5	TV - NTSC or TV - PAL or TV - AUTO	TV system setting
		Press ■ to exit

DVD Version Matrix Info is used to read the version matrix information that are stored/defined in the DVD module software.

STEP	DISPLAY	ACTION
1	FEA-zzzz	Returns the Front End Ali Servo Processor software version.
2	TRAY	Tray 1 can be open or close with the ►II and PROGRAM buttons repectively. Insert a CD onto Tray 1 and close before proceding to next test.
3	SLEDGE	Sledge can be move in and out with the ►II and PROGRAM buttons respectively.
4	MOTOR	Dismotor is turn on and off by pressing ►II and PROGRAM buttons repectively.
5	FOC-RDL	DVD Module does a Focus test follow by Radial test if focus is successful.
	FOC FAIL	Is displayed when the focus test fail.
	RDL FAIL	Is displayed when the radial test fail.
6	GROOVES	In this test the laser spot can jumps to another position. Press ►II to jump to the next postion & PROGRAM to jump to the previous postion.
		Disconnect mains cord to exit the Service Test Program.

DVD Dealer Test is used to check the flash RAM, the SDRAM CLOCK, the NVRAM and the I²C communication (I²C NVRAM I²C DAC, I²C 5DTC and I²C SDPIF IC)

STEP	DISPLAY	ACTION
1	CHECKSUM	Check the correctness of the checksum in the flash. Display will show "PASS" or "FAIL" accordingly.
2	SDRAM CLK	Test the SDRAM clock output. Display "PASS" or "FAIL" accordingly. Pro-Scan: 114MHz +/- 25ppm Non Pro-Scan: 108MHz +/- 25ppm
3	NVRAM	Makes a write followed by a read test to the NVRAM. Display will show "PASS" or "FAIL" accordingly.
4	I²C COMM	Checks I²C bus to NVRAM, DAC, 5DTC and SDPIF IC. Display will show "PASS" or "FAIL" accordingly.
		Disconnect mains cord to exit the Service Test Program.

Reprogramming of DVD version matrix

Caution:
This information is confidential and may not be distributed. Only a qualified service person should reprogram the mono BE board.

After replacement/repair of the Mono BE board, the customer settings and also the region code may be lost. Reprogramming will put the set back in the state in which it has left the factory, i.e. with the default settings and the allowed region code.

Reprogramming will be done by way of the Remote Control.
Put the player in stop mode, Disc 1 with no disc loaded.

Do the following steps with the Remote Control:

1) Press **<DISC MENU>** followed by numerical keys **<1> <5> <9>**
   The set display shows: "**- 0 - 0 - 0 - 0 -** "

2) Press now successively the following numerical keys :

   for MX5500D/21S : **<3><2><4> <0><1><1> <0><0>** **AP**
   for MX5500D/33S : **<3><5><4> <0><1><2> <0><0>** **AP - Korea**
   for MX5500D/35S : **<6><5><4> <0><1><1> <0><0** **AP - China**
   for MX5500D/37 : **<1><1><4> <0><1><3> <0><0>** **US**

   for MX5600D/37 : **<1><1><4> <0><1><3> <0><0>** **US**

   for MX5700D/21R : **<3><2><4> <0><1><1> <0><0>** **AP**
   for MX5700D/21S : **<3><2><4> <0><1><1> <0><0>** **AP**
   for MX5700D/22S : **<2><2><4> <0><1><4> <0><0>** **Europe**
   for MX5700D/25S : **<2><2><4> <0><1><4> <0><0>** **UK**

3) Press **<DISC MENU>** again. The set display will show: "**DONE**".
   Caution: The set needs about 3 seconds to reset to required setting.

4) Disconnect mains to ensure proper reset.

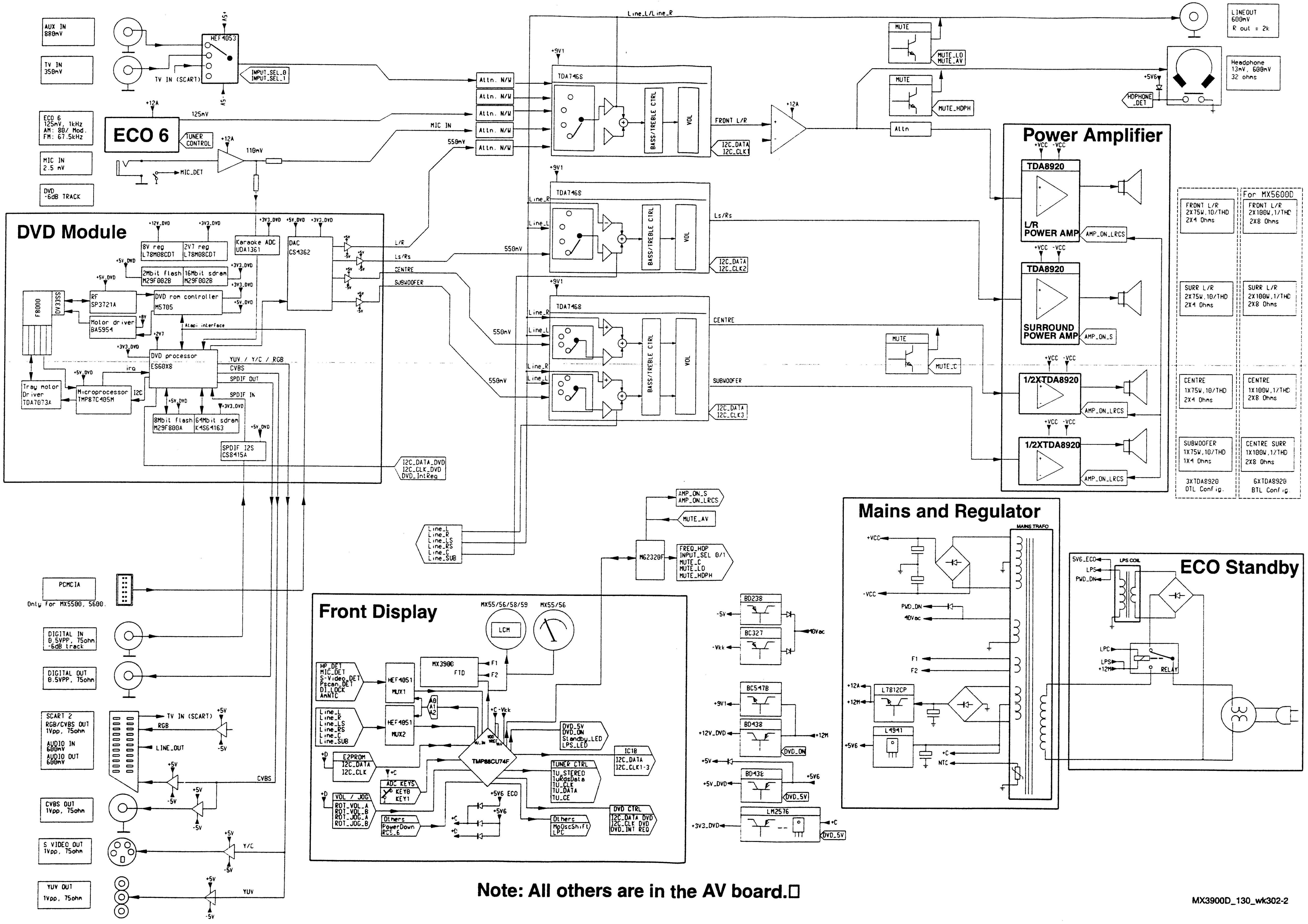
Procedure for check Software version

1) Select Disc with the Remote Control
2) Press <SYSTEM MENU>
3) Use the down key move all the way down (4x) to bottom of "Setup Menu".
4) Use the right key move to the sub-menu.
5) Use the down key move down (3x) to "Default" and down one more time to see the software version.
6) The TV screen will shows:
   R1000 BEA3131PV08 R2812 V72
   where 1000 = DVD version matrix (Region, Karaoke Yes/No, Default Video O/P, Default TV system)
   31V08 = BE software version
   2812 = FE software version
   72 = 5DTC servo version
7) Press <OK> three times to exit.

Procedure to upgrade software

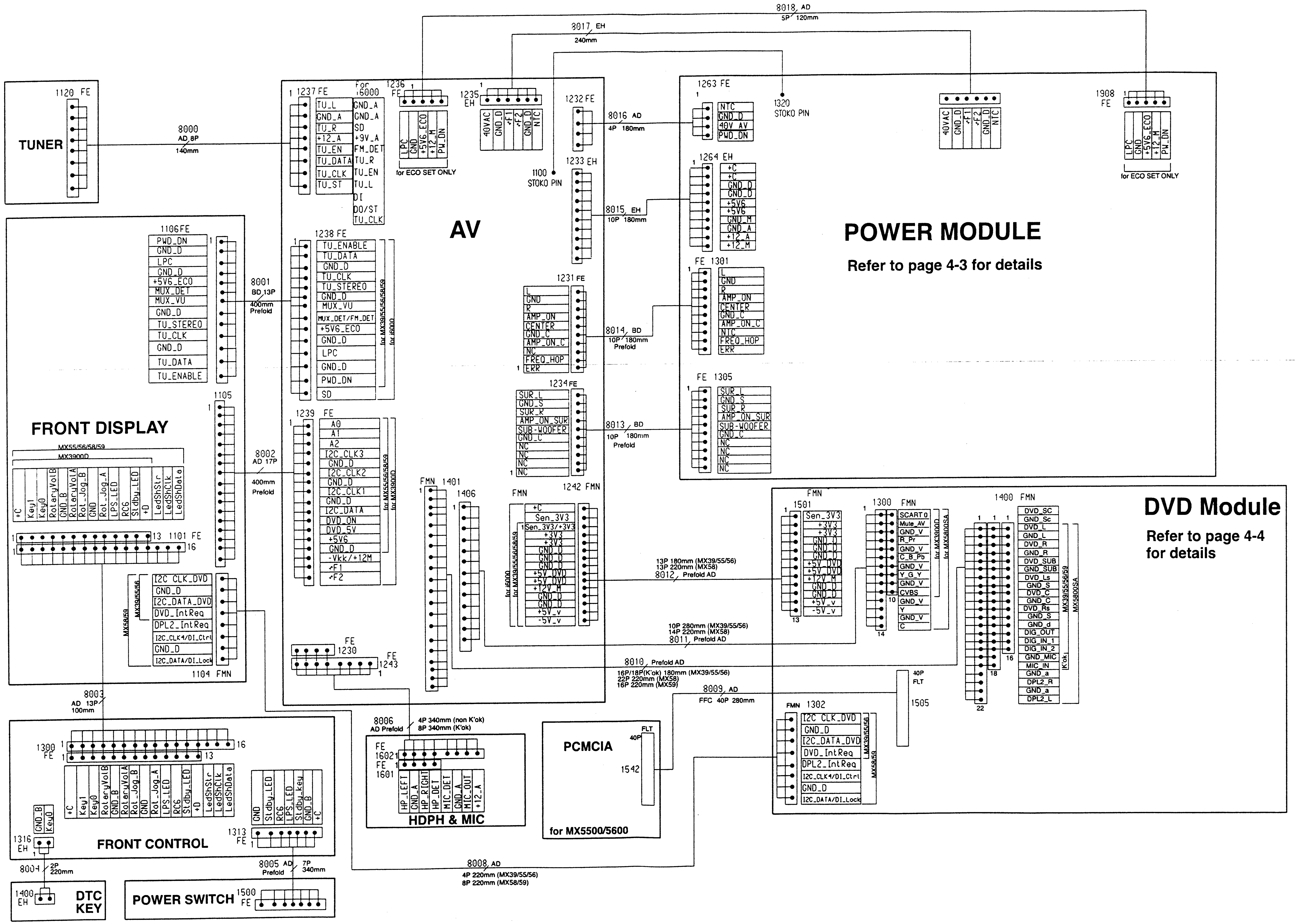
1) Power up the set and open tray Disc 1.
2) Place upgrade CD-ROM onto tray and close.
3) The set will display "DOWNLOAD" while the TV screen will shows:
   Reading --> Update BEA --> Writing --> Done --> Update FEA --> FEA Finish --> Unload Disc 1
4) Tray Disc 1 should then open.
5) The whole process should last for less than 2 minutes. Remove the upgrade CD-ROM and unplug the Mains supply.

SET BLOCK DIAGRAM

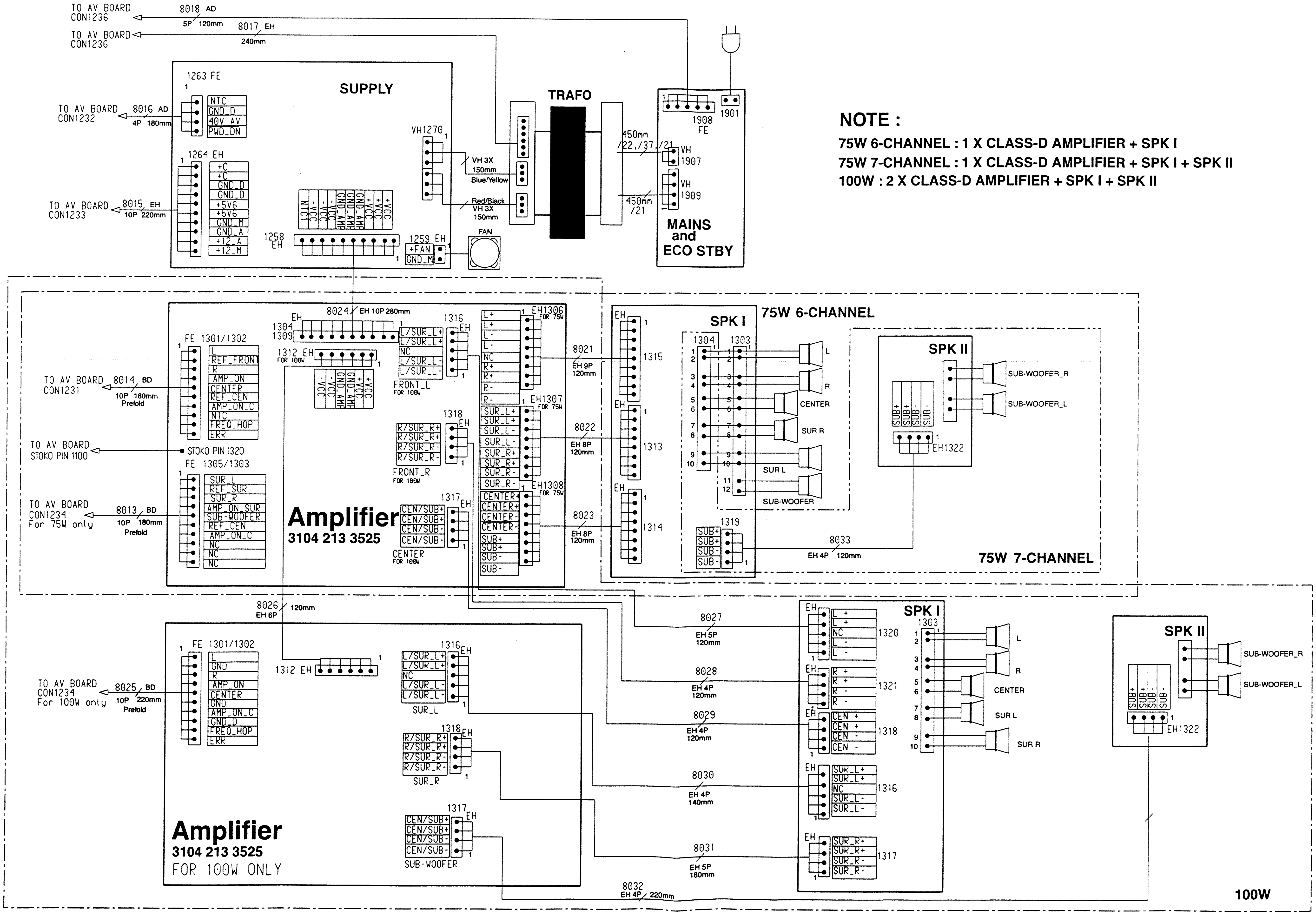

AUX IN
880mV
TV IN
350mV
TV IN (SCART)
HEF4053
+5V
-5V
INPUT_SEL_0
INPUT_SEL_1
ECO 6
125mV, 1kHz
AM: 80/ Mod.
FM: 67.5kHz
ECO 6
+12A
125mV
TUNER
CONTROL
MIC IN
2.5 mV
MIC_DET
110mV
DVD
-6dB TRACK
MIC IN
550mV
Attn. N/W
Line_L/Line_R
+9V1
TDA7468
BASS/TREBLE CTRL
VOL
FRONT L/R
I2C_DATA
I2C_CLK1
I2C_CLK2
I2C_CLK3
Line_R
Line_L
Ls/Rs
CENTRE
SUBWOOFER
MUTE
MUTE_LO
MUTE_AV
MUTE_HDPH
MUTE_C
Attn
LINEOUT
600mV
R out = 2k
Headphone
13mV, 600mV
32 ohms
+5V6
HDPHONE
_DET
Power Amplifier
+VCC -VCC
TDA8920
L/R
POWER AMP
AMP_ON_LRCS
SURROUND
POWER AMP
AMP_ON_S
1/2XTDA8920
FRONT L/R
2X75W, 10/THD
2X4 Ohms
SURR L/R
2X75W, 10/THD
2X4 Ohms
CENTRE
1X75W, 10/THD
2X4 Ohms
SUBWOOFER
1X75W, 10/THD
1X4 Ohms
3XTDA8920
OTL Config.
For MX5600D
FRONT L/R
2X100W, 1/THD
2X8 Ohms
SURR L/R
2X100W, 1/THD
2X8 Ohms
CENTRE
1X100W, 1/THD
2X8 Ohms
CENTRE SURR
1X100W, 1/THD
2X8 Ohms
6XTDA8920
BTL Config.
DVD Module
+12V_DVD
+3V3_DVD
+5V_DVD
8V reg
L78M08CDT
2V7 reg
L78M08CDT
Karaoke ADC
UDA1361
DAC
CS4362
2Mbit flash
M29F002B
16Mbit sdram
M29F002B
F8000
DV33SS
RF
SP3721A
DVD rom controller
M5705
Motor driver
BA5954
+8V
+2V7
Atapi interface
DVD processor
ES60X8
YUV / Y/C / RGB
CVBS
SPDIF OUT
SPDIF IN
irq
I2C
Tray motor
Driver
TDA7073A
Microprocessor
TMP87C405M
8Mbit flash
M29F800A
64Mbit sdram
K4S64163
SPDIF I2S
CS8415A
L/R
+5v
-5v
I2C_DATA_DVD
I2C_CLK_DVD
DVD_IntReq
Line_L
Line_R
Line_LS
Line_RS
Line_C
Line_SUB
AMP_ON_S
AMP_ON_LRCS
MUTE_AV
M62320F
FREQ_HDP
INPUT_SEL 0/1
MUTE_C
MUTE_LO
MUTE_HDPH
PCMCIA
Only for MX5500, 5600.
DIGITAL IN
0.5VPP, 75ohm
-6dB track
DIGITAL OUT
0.5VPP, 75ohm
SCART 2
RGB/CVBS OUT
1Vpp, 75ohm
AUDIO IN
600mV
AUDIO OUT
600mV
TV IN (SCART)
RGB
LINE_OUT
CVBS
CVBS OUT
1Vpp, 75ohm
S VIDEO OUT
1Vpp, 75ohm
Y/C
YUV OUT
1Vpp, 75ohm
YUV
Front Display
MX55/56/58/59
MX55/56
LCM
MX3900
FTD
F1
F2
HP_DET
MIC_DET
S-Video_DET
Pscan_DET
DI_LOCK
AmNTC
HEF4051
MUX1
MUX2
A0
A1
A2
+C -Vkk
TMP88CU74F
DVD_5V
DVD_ON
Standby_LED
LPS_LED
IC18
I2C_DATA
I2C_CLK1-3
+D
E2PROM
I2C_DATA
I2C_CLK
+C
ADC KEYS
KEY0
KEY1
TUNER CTRL
TU_STEREO
TuRdsData
TU_CLK
TU_DATA
TU_CE
VOL / JOG
ROT_VOL_A
ROT_VOL_B
ROT_JOG_A
ROT_JOG_B
+5V6 ECO
+5V6
Others
PowerDown
RC5_6
Others
MpOscShift
LPC
DVD CTRL
I2C_DATA DVD
I2C_CLK DVD
DVD_INT REQ
BD238
-5V
BC327
-Vkk
40Vac
BC547B
+9V1
BD438
+12V_DVD
+12M
DVD_ON
+5V
BD438
+5V_DVD
+5V6
DVD_5V
LM2576
+3V3_DVD
+C
DVD_5V
Mains and Regulator
MAINS TRAFO
+VCC
-VCC
PWD_DN
40Vac
F1
F2
+12A
+12M
L7812CP
L4941
+5V6
+C
NTC
ECO Standby
5V6_ECO
LPS
PWD_DN
LPS COIL
LPC
LPS
+12M
RELAY

Note: All others are in the AV board.□

MAIN WIRING DIAGRAM


TUNER
1120 FE
8000 AD 8P 140mm
AV
1237 FE
For 6000
1236 FE
1235 EH
1232 FE
1233 EH
1238 FE
1239 FE
1231 FE
1234 FE
1242 FMN
FMN 1401
1406
1230 FE
1243 FE
for ECO SET ONLY
1100 STOKO PIN
1320 STOKO PIN
8016 AD 4P 180mm
8015 EH 10P 180mm
8014 BD 10P 180mm Prefold
8013 BD 10P 180mm Prefold
8017 EH 240mm
8018 AD 5P 120mm
POWER MODULE
Refer to page 4-3 for details
1263 FE
1264 EH
FE 1301
FE 1305
1908 FE
FRONT DISPLAY
1106FE
1105
1101 FE
1104 FMN
MX55/56/58/59
MX3900D
8001 BD 13P 400mm Prefold
8002 AD 17P 400mm Prefold
8003 AD 13P 100mm
FRONT CONTROL
1300 FE
1313 FE
1316 EH
8004 2P 220mm
1400 EH
DTC KEY
POWER SWITCH
1500 FE
8005 AD 7P 340mm Prefold
HDPH & MIC
FE 1602
FE 1601
8006 AD Prefold 4P 340mm (non K'ok) 8P 340mm (K'ok)
PCMCIA
1542
FLT 40P
for MX5500/5600
8008 AD 4P 220mm (MX39/55/56) 8P 220mm (MX58/59)
8009 AD FFC 40P 280mm
8010 Prefold AD 16P/18P(K'ok) 180mm (MX39/55/56) 22P 220mm (MX58) 16P 220mm (MX59)
8011 Prefold AD 10P 280mm (MX39/55/56) 14P 220mm (MX58)
8012 Prefold AD 13P 180mm (MX39/55/56) 13P 220mm (MX58)
DVD Module
Refer to page 4-4 for details
FMN 1501
1300 FMN
1400 FMN
FMN 1302
1505 40P FLT
for MX3900D
for MX5800SA
MX39/55/56/59
MX58/59

WIRING DIAGRAM - POWER MODULE DETAILS


TO AV BOARD CON1236
8018 AD
5P 120mm
8017 EH
240mm
TO AV BOARD CON1236
SUPPLY
1263 FE
NTC
GND_D
40V AV
PWD_DN
TO AV BOARD CON1232
8016 AD
4P 180mm
1264 EH
+C
+C
GND_D
GND_D
+5V6
+5V6
GND_M
GND_A
+12_A
+12_M
TO AV BOARD CON1233
8015 EH
10P 220mm
NTC
-VCC
-VCC
-VCC
GND_AMP
GND_AMP
GND_AMP
+VCC
+VCC
+VCC
1258 EH
1259 EH
+FAN
GND_M
FAN
VH1270
VH 3X
150mm
Blue/Yellow
Red/Black
VH 3X
150mm
TRAFO
450mm
/22,/37,/21
450mm
/21
1908 FE
1901
VH
1907
VH
1909
MAINS and ECO STBY
EH
8024 EH 10P 280mm
1304
1309
1316 EH
L/SUR_L+
L/SUR_L+
NC
L/SUR_L-
L/SUR_L-
FRONT_L
FOR 100W
1312 EH
FOR 100W
-VCC
-VCC
GND_AMP
GND_AMP
+VCC
+VCC
FE 1301/1302
L
REF_FRONT
R
AMP_ON
CENTER
REF_CEN
AMP_ON_C
NTC
FREQ_HOP
ERR
TO AV BOARD CON1231
8014 BD
10P 180mm
Prefold
TO AV BOARD STOKO PIN 1100
STOKO PIN 1320
FE 1305/1303
SUR_L
REF_SUR
SUR_R
AMP_ON_SUR
SUB-WOOFER
REF_CEN
AMP_ON_C
NC
NC
NC
TO AV BOARD CON1234 For 75W only
8013 BD
10P 180mm
Prefold
1318 EH
R/SUR_R+
R/SUR_R+
R/SUR_R-
R/SUR_R-
FRONT_R
FOR 100W
1317 EH
CEN/SUB+
CEN/SUB+
CEN/SUB-
CEN/SUB-
CENTER
FOR 100W
Amplifier
3104 213 3525
EH1306
FOR 75W
L+
L+
L-
L-
NC
R+
R+
R-
R-
EH1307
FOR 75W
SUR_L+
SUR_L+
SUR_L-
SUR_L-
SUR_R+
SUR_R+
SUR_R-
SUR_R-
EH1308
FOR 75W
CENTER+
CENTER+
CENTER-
CENTER-
SUB+
SUB+
SUB-
SUB-
8021
EH 9P
120mm
8022
EH 8P
120mm
8023
EH 8P
120mm
SPK I
75W 6-CHANNEL
1315
1313
1314
1304
1303
L
R
CENTER
SUR R
SUR L
SUB-WOOFER
1319
SUB+
SUB+
SUB-
SUB-
8033
EH 4P 120mm
SPK II
SUB-WOOFER_R
SUB-WOOFER_L
SUB+
SUB+
SUB-
SUB-
EH1322
75W 7-CHANNEL
8026
EH 6P
120mm
FE 1301/1302
L
GND
R
AMP_ON
CENTER
GND
AMP_ON_C
GND_D
FREQ_HOP
ERR
TO AV BOARD CON1234 For 100W only
8025 BD
10P 220mm
Prefold
1312 EH
1316 EH
L/SUR_L+
L/SUR_L+
NC
L/SUR_L-
L/SUR_L-
SUR_L
1318 EH
R/SUR_R+
R/SUR_R+
R/SUR_R-
R/SUR_R-
SUR_R
1317 EH
CEN/SUB+
CEN/SUB+
CEN/SUB-
CEN/SUB-
SUB-WOOFER
Amplifier
3104 213 3525
FOR 100W ONLY
8027
EH 5P
120mm
8028
EH 4P
120mm
8029
EH 4P
120mm
8030
EH 4P
140mm
8031
EH 5P
180mm
8032
EH 4P 220mm
SPK I
1303
L +
L +
NC
L -
L -
1320
R +
R +
R -
R -
1321
CEN +
CEN +
CEN -
CEN -
1318
SUR_L+
SUR_L+
NC
SUR_L-
SUR_L-
1316
SUR_R+
SUR_R+
SUR_R-
SUR_R-
1317
L
R
CENTER
SUR L
SUR R
SPK II
SUB-WOOFER_R
SUB-WOOFER_L
SUB+
SUB+
SUB-
SUB-
EH1322
100W

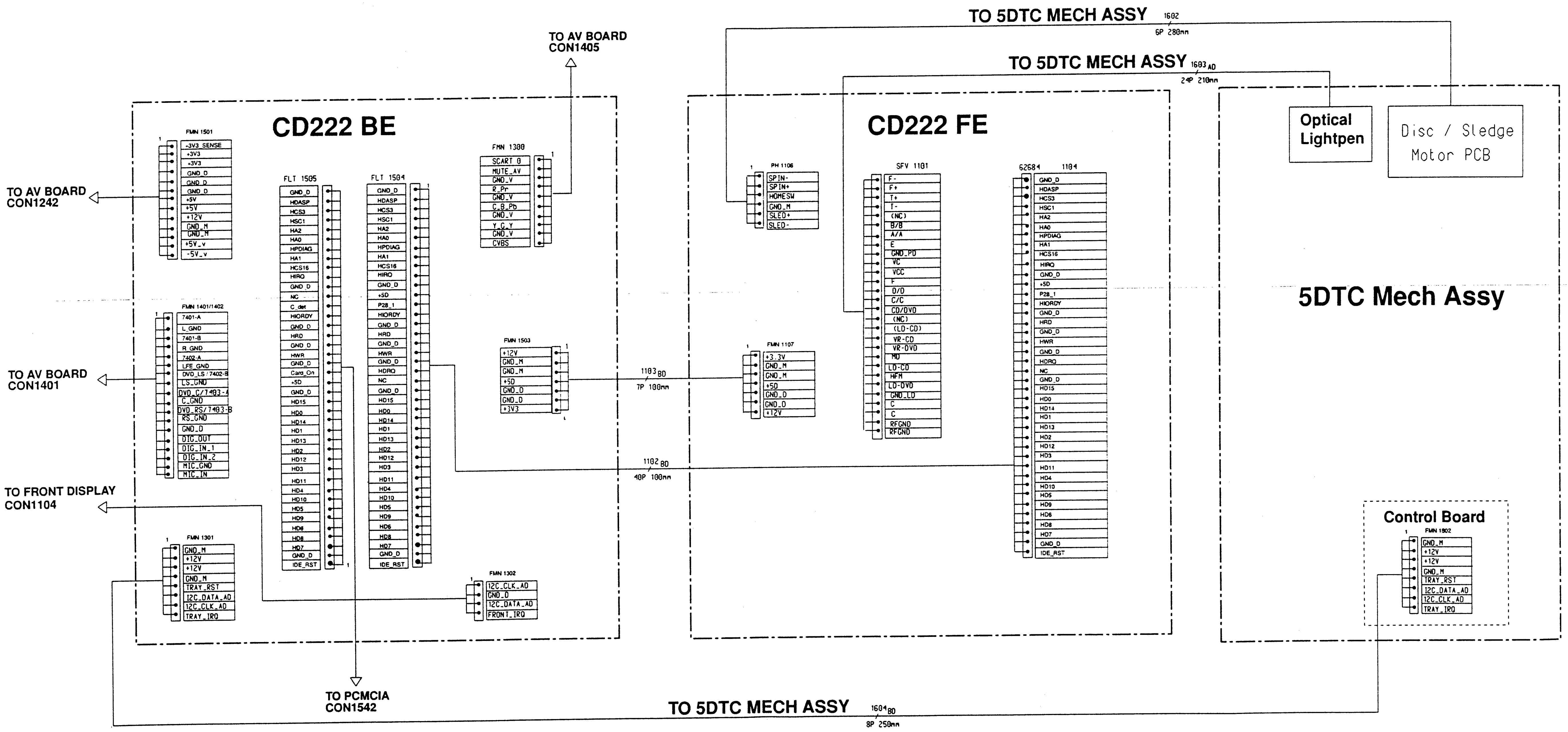
NOTE :

75W 6-CHANNEL : 1 X CLASS-D AMPLIFIER + SPK I

75W 7-CHANNEL : 1 X CLASS-D AMPLIFIER + SPK I + SPK II

100W : 2 X CLASS-D AMPLIFIER + SPK I + SPK II

WIRING DIAGRAM - DVD MODULE DETAILS


TO 5DTC MECH ASSY
1602
6P 280mm
TO 5DTC MECH ASSY
1603 AD
24P 210mm
TO AV BOARD
CON1405
CD222 BE
FMN 1501
1
+3V3_SENSE
+3V3
+3V3
GND_D
GND_D
GND_D
+5V
+5V
+12V
GND_M
GND_M
+5V_v
-5V_v
TO AV BOARD
CON1242
FLT 1505
GND_D
HDASP
HCS3
HSC1
HA2
HA0
HPDIAG
HA1
HCS16
HIRQ
GND_D
NC
C_det
HIORDY
GND_D
HRD
GND_D
HWR
GND_D
Card_On
+5D
GND_D
HD15
HD0
HD14
HD1
HD13
HD2
HD12
HD3
HD11
HD4
HD10
HD5
HD9
HD6
HD8
HD7
GND_D
IDE_RST
1
FLT 1504
1
GND_D
HDASP
HCS3
HSC1
HA2
HA0
HPDIAG
HA1
HCS16
HIRQ
GND_D
+5D
P28_1
HIORDY
GND_D
HRD
GND_D
HWR
GND_D
HDRQ
NC
GND_D
HD15
HD0
HD14
HD1
HD13
HD2
HD12
HD3
HD11
HD4
HD10
HD5
HD9
HD6
HD8
HD7
GND_D
IDE_RST
FMN 1300
1
SCART 0
MUTE_AV
GND_V
R_Pr
GND_V
C_B_Pb
GND_V
Y_C_Y
GND_V
CVBS
FMN 1401/1402
1
7401-A
L_GND
7401-B
R_GND
7402-A
LFE_GND
DVD_LS / 7402-B
LS_GND
DVD_C/7403-A
C_GND
DVD_RS/7403-B
RS_GND
GND_D
DIG_OUT
DIG_IN_1
DIG_IN_2
MIC_GND
MIC_IN
TO AV BOARD
CON1401
FMN 1503
1
+12V
GND_M
GND_M
+5D
GND_D
GND_D
+3V3
1103 BD
7P 100mm
1102 BD
40P 100mm
TO FRONT DISPLAY
CON1104
FMN 1301
1
GND_M
+12V
+12V
GND_M
TRAY_RST
I2C_DATA_AD
I2C_CLK_AD
TRAY_IRQ
FMN 1302
1
I2C_CLK_AD
GND_D
I2C_DATA_AD
FRONT_IRQ
TO PCMCIA
CON1542
CD222 FE
PH 1106
1
SPIN-
SPIN+
HOMESW
GND_M
SLED+
SLED-
FMN 1107
1
+3.3V
GND_M
GND_M
+5D
GND_D
GND_D
+12V
SFV 1101
F-
F+
T+
T-
(NC)
B/B
A/A
E
GND_PD
VC
VCC
F
D/D
C/C
CD/DVD
(NC)
(LD-CD)
VR-CD
VR-DVD
MD
LD-CD
HFM
LD-DVD
GND_LD
C
C
RFGND
RFGND
62684 1104
GND_D
HDASP
HCS3
HSC1
HA2
HA0
HPDIAG
HA1
HCS16
HIRQ
GND_D
+5D
P28_1
HIORDY
GND_D
HRD
GND_D
HWR
GND_D
HDRQ
NC
GND_D
HD15
HD0
HD14
HD1
HD13
HD2
HD12
HD3
HD11
HD4
HD10
HD5
HD9
HD6
HD8
HD7
GND_D
IDE_RST
Optical
Lightpen
Disc / Sledge
Motor PCB
5DTC Mech Assy
Control Board
1
FMN 1502
GND_M
+12V
+12V
GND_M
TRAY_RST
I2C_DATA_AD
I2C_CLK_AD
TRAY_IRQ
TO 5DTC MECH ASSY
1604 BD
8P 250mm

PCMCIA BOARD

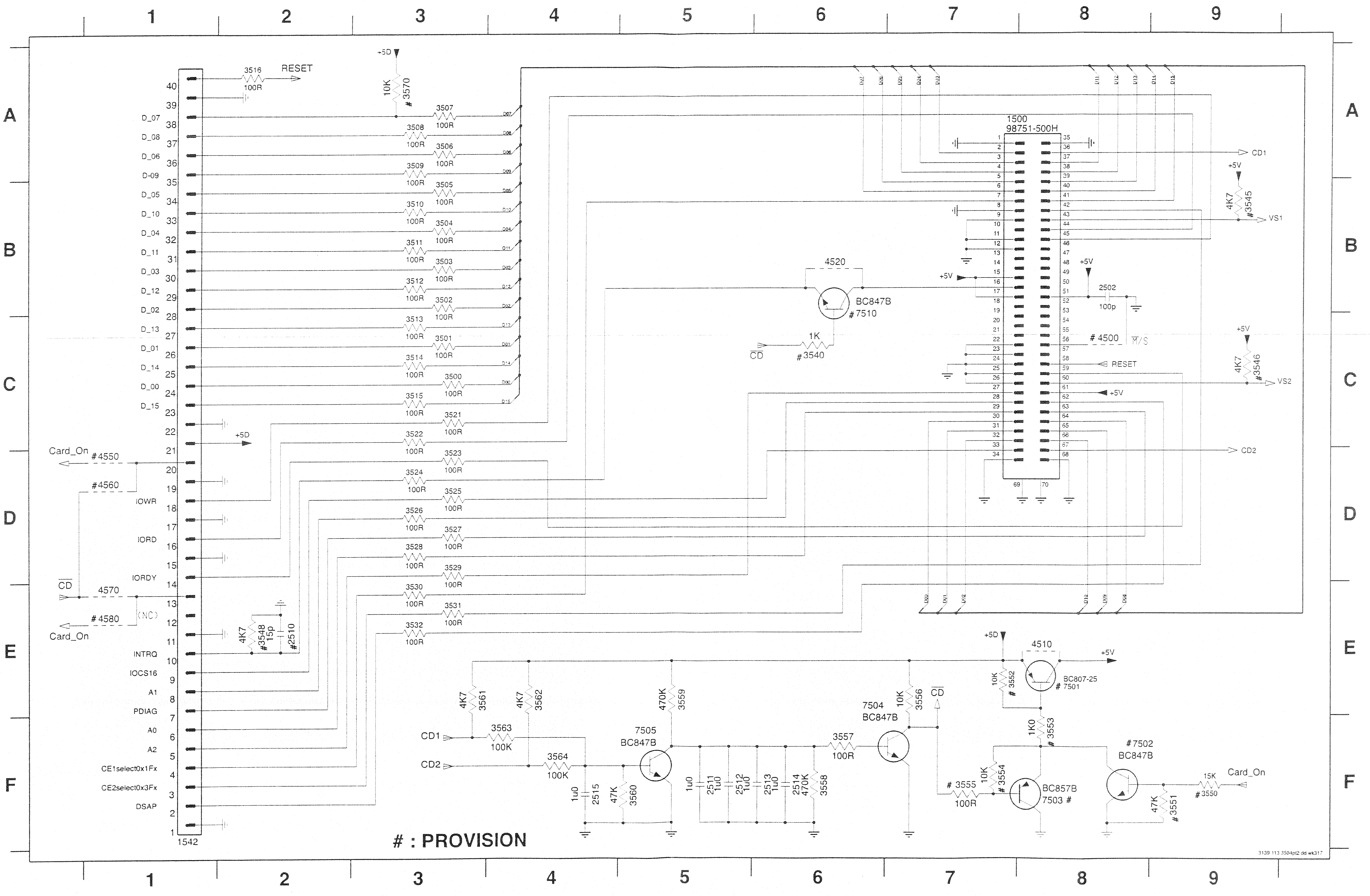
TABLE OF CONTENTS

Circuit Diagram 5-2
Component & Chips Layout 5-3
Electrical parts list 5-4

Notes:

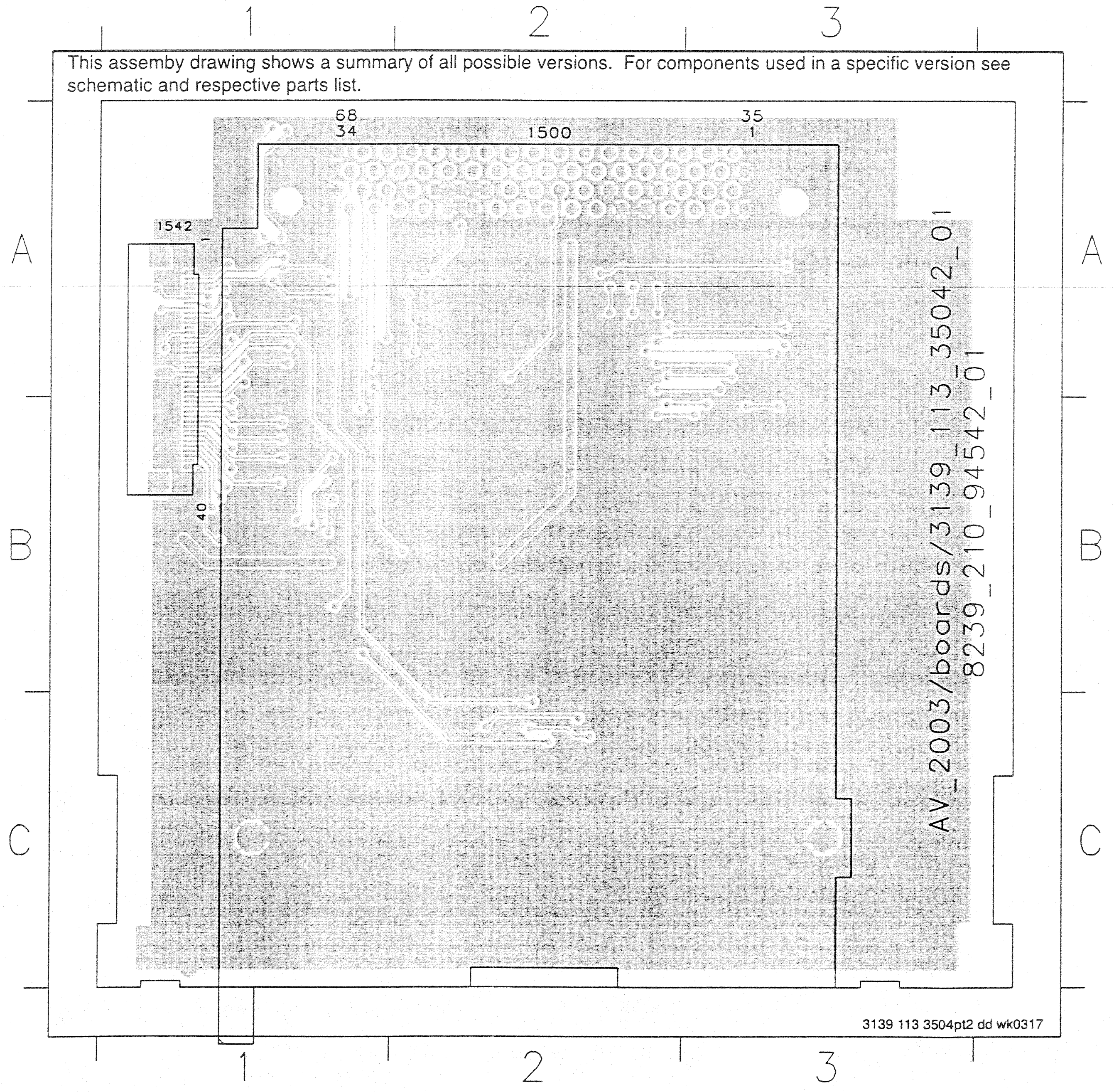
CIRCUIT DIAGRAM

1500	A7
1542	F1
2502	B8
2510	E2
2511	F5
2512	F5
2513	F6
2514	F6
2515	F4
3500	C3
3501	C3
3502	B3
3503	B3
3504	B3
3505	B3
3506	A3
3507	A3
3508	A3
3509	A3
3510	B3
3511	B3
3512	B3
3513	C3
3514	C3
3515	C3
3516	A2
3521	C3
3522	C3
3523	D3
3524	D3
3525	D3
3526	D3
3527	D3
3528	D3
3529	D3
3530	E3
3531	E3
3532	E3
3540	C6
3545	B9
3546	C9
3548	E2
3550	F9
3551	F9
3552	E7
3553	F8
3554	F7
3555	F7
3556	E7
3557	F6
3558	F6
3559	E5
3560	F5
3561	E3
3562	E4
3563	F4
3564	F4
3570	A3
4500	C8
4510	E8
4520	B6
4550	D1
4560	D1
4570	E1
4580	E1
7501	E8
7502	F9
7503	F8
7504	E6
7505	F5
7510	B6


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
+5D
10K
# 3570
3516
100R
RESET
3507
3508
3506
3509
3505
3510
3504
3511
3503
3512
3502
3513
3501
3514
3500
3515
3521
3522
3523
3524
3525
3526
3527
3528
3529
3530
3531
3532
100R
D_07
D_08
D_06
D-09
D_05
D_10
D_04
D_11
D_03
D_12
D_02
D_13
D_01
D_14
D_00
D_15
IOWR
IORD
IORDY
INTRQ
IOCS16
A1
PDIAG
A0
A2
CE1select0x1Fx
CE2select0x3Fx
DSAP
1542
Card_On
#4550
#4560
CD
4570
#4580
(NC)
Card_On
4K7
#3548
15p
#2510
1500
98751-500H
CD1
+5V
4K7
#3545
VS1
4520
BC847B
#7510
1K
CD
#3540
2502
100p
# 4500
M/S
RESET
+5V
4K7
#3546
VS2
CD2
69
70
+5D
4510
+5V
10K
# 3552
BC807-25
# 7501
CD
7504
BC847B
10K
3556
1K0
# 3553
4K7
3561
4K7
3562
470K
3559
CD1
3563
100K
CD2
3564
100K
7505
BC847B
1u0
2515
47K
3560
1u0
2511
1u0
2512
1u0
2513
1u0
2514
470K
3558
3557
100R
# 3555
100R
10K
# 3554
BC857B
7503 #
#7502
BC847B
15K
#3550
Card_On
47K
#3551
# : PROVISION
3139 113 3504pt2 dd wk317

COMPONENT & CHIPS LAYOUT

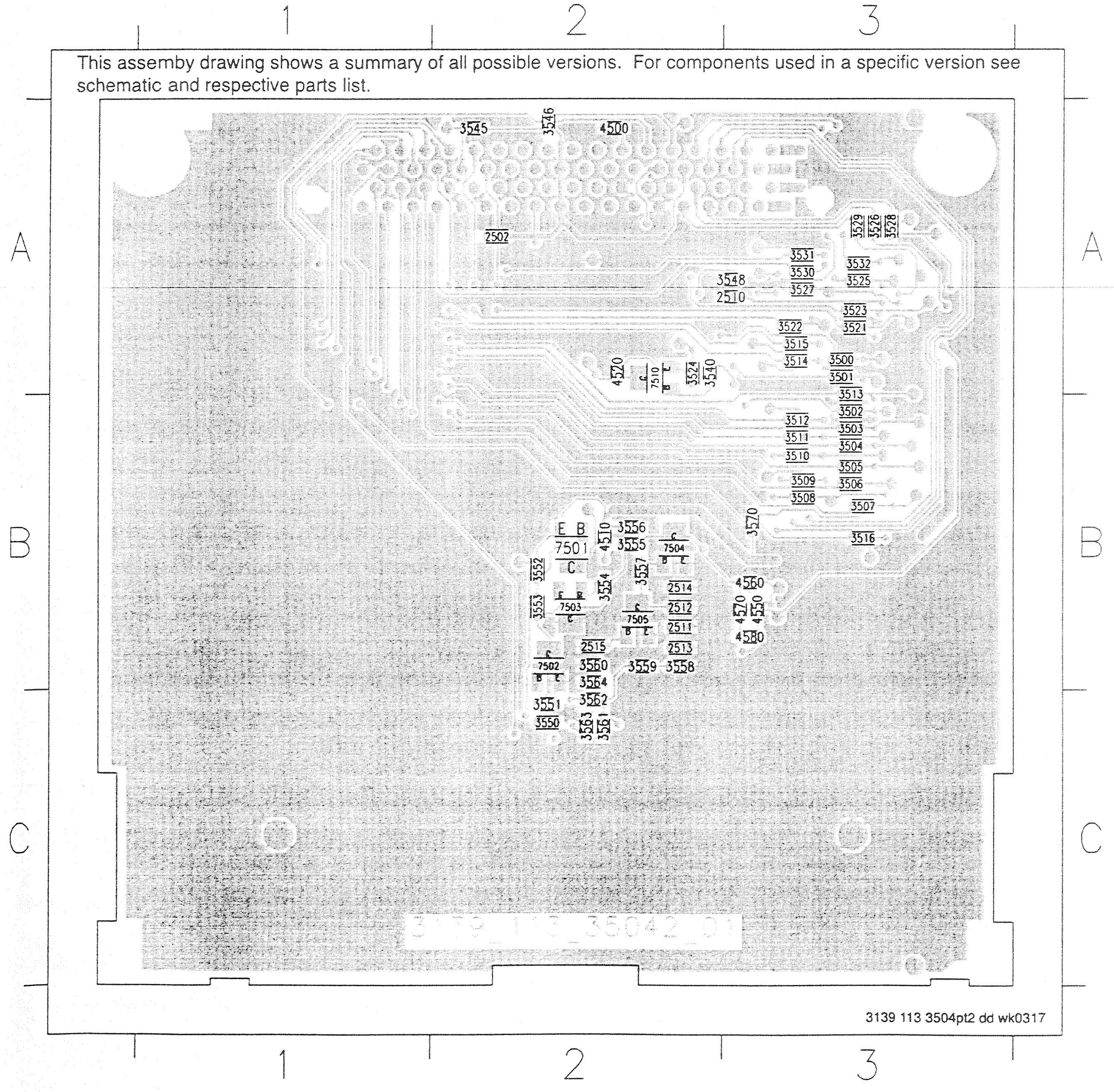
1500	A2	1542	A1


This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

1
2
3
A
B
C
68
34
35
1
1500
1542
40
AV_2003/boards/3139_113_35042_01
8239_210_94542_01

3139 113 3504pt2 dd wk0317

2502	A2	3502	B3	3511	B3	3524	A2	3540	A2	3555	B2	3564	B2	7501	B2
2510	A3	3503	B3	3512	B3	3525	A3	3545	A2	3556	B2	3570	B3	7502	B2
2511	B2	3504	B3	3513	A3	3526	A3	3546	A2	3557	B2	4500	A2	7503	B2
2512	B2	3505	B3	3514	A3	3527	A3	3548	A3	3558	B2	4510	B2	7504	B2
2513	B2	3506	B3	3515	A3	3528	A3	3550	C2	3559	B2	4520	A2	7505	B2
2514	B2	3507	B3	3516	B3	3529	A3	3551	C2	3560	B2	4550	B3	7510	A2
2515	B2	3508	B3	3521	A3	3530	A3	3552	B2	3561	C2	4560	B3		
3500	A3	3509	B3	3522	A3	3531	A3	3553	B2	3562	C2	4570	B3		
3501	A3	3510	B3	3523	A3	3532	A3	3554	B2	3563	C2	4580	B3		


This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

1
2
3
A
B
C
3545
3546
4500
2502
3529
3526
3528
3531
3530
3527
3532
3525
3548
2510
3523
3521
3522
3515
3514
3500
3501
4520
7510
3524
3540
3513
3512
3502
3511
3503
3510
3504
3505
3509
3506
3508
3507
3570
3516
7501
4510
3556
3555
7504
3552
3554
3557
4560
3553
7503
2514
2512
4570
4550
7505
2511
4580
2515
2513
7502
3560
3559
3558
3564
3551
3562
3550
3563
3561
3139_113_35042_01

3139 113 3504pt2 dd wk0317

ELECTRICAL PARTS LIST - PCMCIA BOARD

MISCELLANEOUS

	3139 118 56571	PCMCIA Board Assembly
1500	2422 025 18005	Socket PCMCIA 68P
1542	2422 025 17371	Flex Socket 40P

CAPACITORS

2502	2020 552 94427	100pF 5% 50V
2511	3198 017 41050	1uF 10V
2512	3198 017 41050	1uF 10V
2514	3198 017 41050	1uF 10V
2515	3198 017 41050	1uF 10V

RESISTORS

3500	4822 051 30101	100R 5% 0,062W
3501	4822 051 30101	100R 5% 0,062W
3502	4822 051 30101	100R 5% 0,062W
3503	4822 051 30101	100R 5% 0,062W
3504	4822 051 30101	100R 5% 0,062W
3505	4822 051 30101	100R 5% 0,062W
3506	4822 051 30101	100R 5% 0,062W
3507	4822 051 30101	100R 5% 0,062W
3508	4822 051 30101	100R 5% 0,062W
3509	4822 051 30101	100R 5% 0,062W
3510	4822 051 30101	100R 5% 0,062W
3511	4822 051 30101	100R 5% 0,062W
3512	4822 051 30101	100R 5% 0,062W
3513	4822 051 30101	100R 5% 0,062W
3514	4822 051 30101	100R 5% 0,062W
3515	4822 051 30101	100R 5% 0,062W
3516	4822 051 30101	100R 5% 0,062W
3521	4822 051 30101	100R 5% 0,062W
3522	4822 051 30101	100R 5% 0,062W
3523	4822 051 30101	100R 5% 0,062W
3524	4822 051 30101	100R 5% 0,062W
3525	4822 051 30101	100R 5% 0,062W
3526	4822 051 30101	100R 5% 0,062W
3527	4822 051 30101	100R 5% 0,062W
3528	4822 051 30101	100R 5% 0,062W
3529	4822 051 30101	100R 5% 0,062W
3530	4822 051 30101	100R 5% 0,062W
3531	4822 051 30101	100R 5% 0,062W
3532	4822 051 30101	100R 5% 0,062W
3552	4822 051 30103	10k 5% 0,062W
3553	4822 051 30102	1k 5% 0,062W
3554	4822 051 30103	10k 5% 0,062W
3555	4822 051 30101	100R 5% 0,062W
3556	4822 051 30103	10k 5% 0,062W
3557	4822 051 30101	100R 5% 0,062W
3558	4822 051 30474	470k 5% 0,062W
3559	4822 051 30474	470k 5% 0,062W
3560	4822 117 12925	47k 1% 0,063W
3561	4822 051 30472	4k7 5% 0,062W
3562	4822 051 30472	4k7 5% 0,062W
3563	4822 117 13632	100k 1% 0,62W
3564	4822 117 13632	100k 1% 0,62W
4501	4822 051 30008	0R Jumper 0603
4502	4822 051 30008	0R Jumper 0603
4510	4822 051 30008	0R Jumper 0603
4520	4822 051 30008	0R Jumper 0603
4570	4822 051 30008	0R Jumper 0603

TRANSISTORS

7501	5322 130 60845	BC807-25
7503	4822 130 60373	BC857B
7504	5322 130 60159	BC847B
7505	5322 130 60159	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.

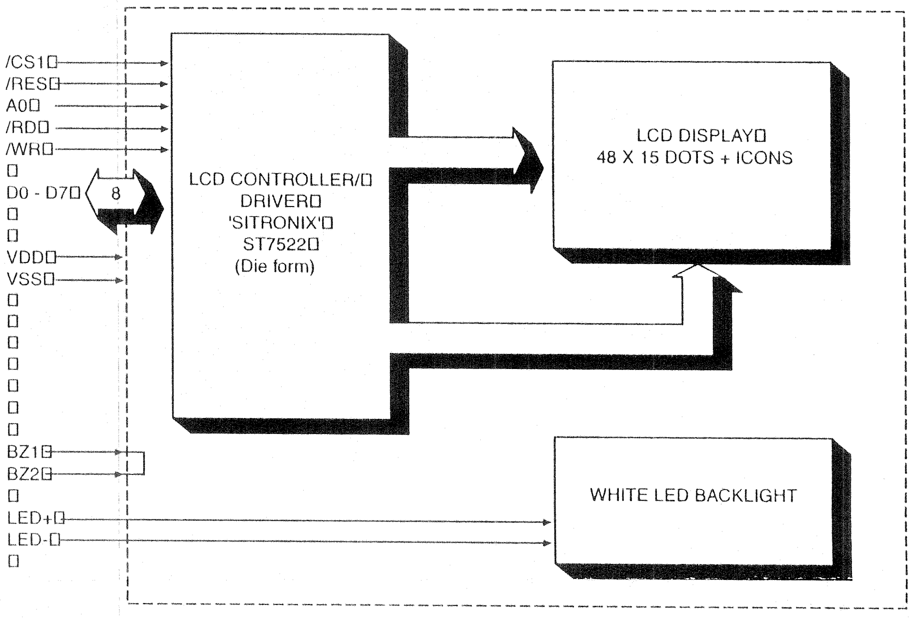
FRONT BOARDS

TABLE OF CONTENTS

FTD Display Module pin configuration 6-1
Front Display part - Circuit diagram 6-2
Front Display part - Component & Chip layouts 6-3
Front Display part - Chip layout Part A 6-4
Front Display part - Chip layout Part B 6-5
Front Control part - Chip layout 6-6
Front Control part - Component layout 6-7
Front Control part - Circuit diagram 6-8
DTC Key part - Component & Chip layouts 6-9
DTC Key part - Circuit diagram 6-10
Power Switch part - Circuit diagram 6-10
Power Switch part - Component & Chip layouts 6-11
HDPH & Mic part - Circuit diagram (Non-Karaoke version) 6-12
HDPH & Mic part - Comp. & Chip layouts (Non-Karaoke version) 6-13
HDPH & Mic part - Circuit diagram (Karaoke version) 6-14
HDPH & Mic part - Comp. & Chip layouts (Karaoke version) 6-15
Electrical parts list 6-16

FTD DISPLAY PIN CONFIGURATION

BLOCK DIAGRAM

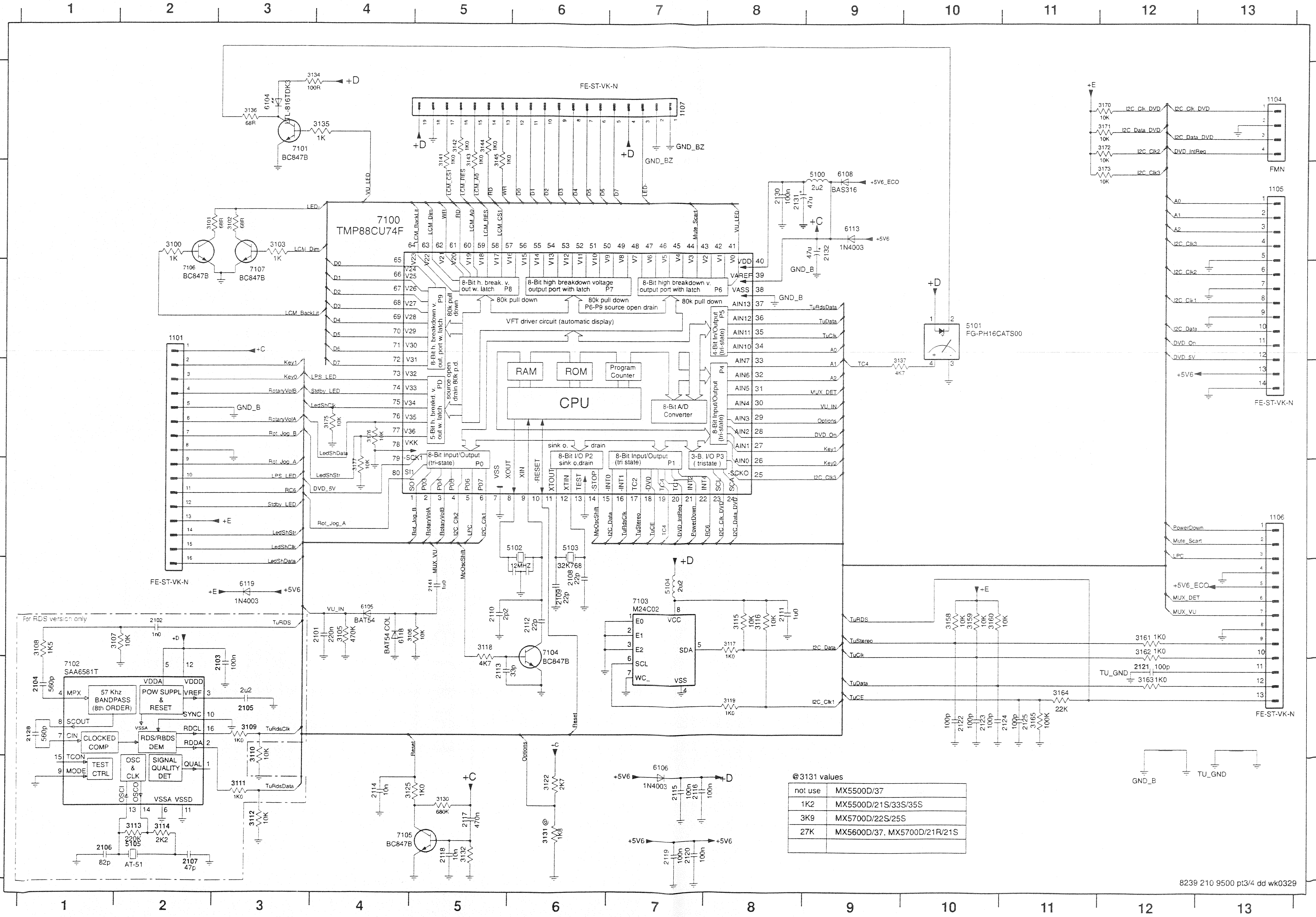


PIN CONFIGURATION

Pin No.	Symbol.	Description
1	VDD	Power supply for logic circuit (+5V)
2	VSS	Ground (0V)
3	/CS1	Input, when /CS1 = 0, the chip select become active
4	/RES	Input low active, System reset
5	A0	Usually connected to the low-order bit of the MPU address bus and used to identify the data or a command. A0=1: D0 - D7 are display data A0=0: D0 - D7 are display control data
6	/RD	For the connection of 80-series MPU: Input, Active low The /RD signal of the 80-series MPU is entered in this pin. When this signal is kept low, the ST7522 data bus is in the output status.
7	/WR	For the connection of 80-series MPU: Input, Active low The /WR signal of the 80-series MPU is entered in this pin. A signal on the data bus is fetched at the rising edge of /WR signal.
8	D0	Data input/output (LSB)
9	D1	Data input/output
10	D2	Data input/output
11	D3	Data input/output
12	D4	Data input/output
13	D5	Data input/output
14	D6	Data input/output
15	D7	Data input/output (MSB)
16	LED+	Anode of backlight
17	LED-	Cathode of backlight
18	BZ1	Bezel ground (connected together)
19	BZ2	Bezel ground (connected together)

FRONT DISPLAY PART - CIRCUIT DIAGRAM

1101	C2
1104	A13
1105	B13
1106	E13
1107	A7
2101	F4
2102	F2
2103	G3
2104	G1
2105	G3
2106	H1
2107	H2
2108	F6
2109	F6
2110	F5
2111	F8
2112	F6
2113	G5
2114	H4
2115	H7
2116	H7
2117	H5
2118	H5
2119	H7
2120	H7
2121	G12
2122	G10
2123	G10
2124	G11
2125	G11
2128	G1
2130	B8
2131	B8
2132	B9
2141	F5
3100	B2
3101	B2
3102	B3
3103	B3
3105	F4
3106	F5
3107	F2
3108	F1
3109	G3
3110	G3
3111	H3
3112	H3
3113	H2
3114	H2
3115	F8
3116	F8
3117	F8
3118	F5
3119	G8
3122	H6
3125	H5
3130	H5
3131	H6
3132	H5
3134	A3
3135	A4
3136	A3
3137	D9
3141	B5
3142	A5
3143	B5
3144	A5
3145	B5
3158	F10
3159	F10
3160	F10
3161	F12
3162	F12
3163	G12
3164	G11
3165	G11
3170	A12
3171	A12
3172	A12
3173	B12
3175	D4
3176	D4
3177	E4
5100	B9
5101	C10
5102	E6
5103	E6
5104	F7
5105	H2
6104	A3
6105	F4
6106	H7
6108	B9
6113	B9
6118	F4
6119	F3
7101	A3
7103	F7
7104	F6
7105	H5
7106	C2
7107	C3

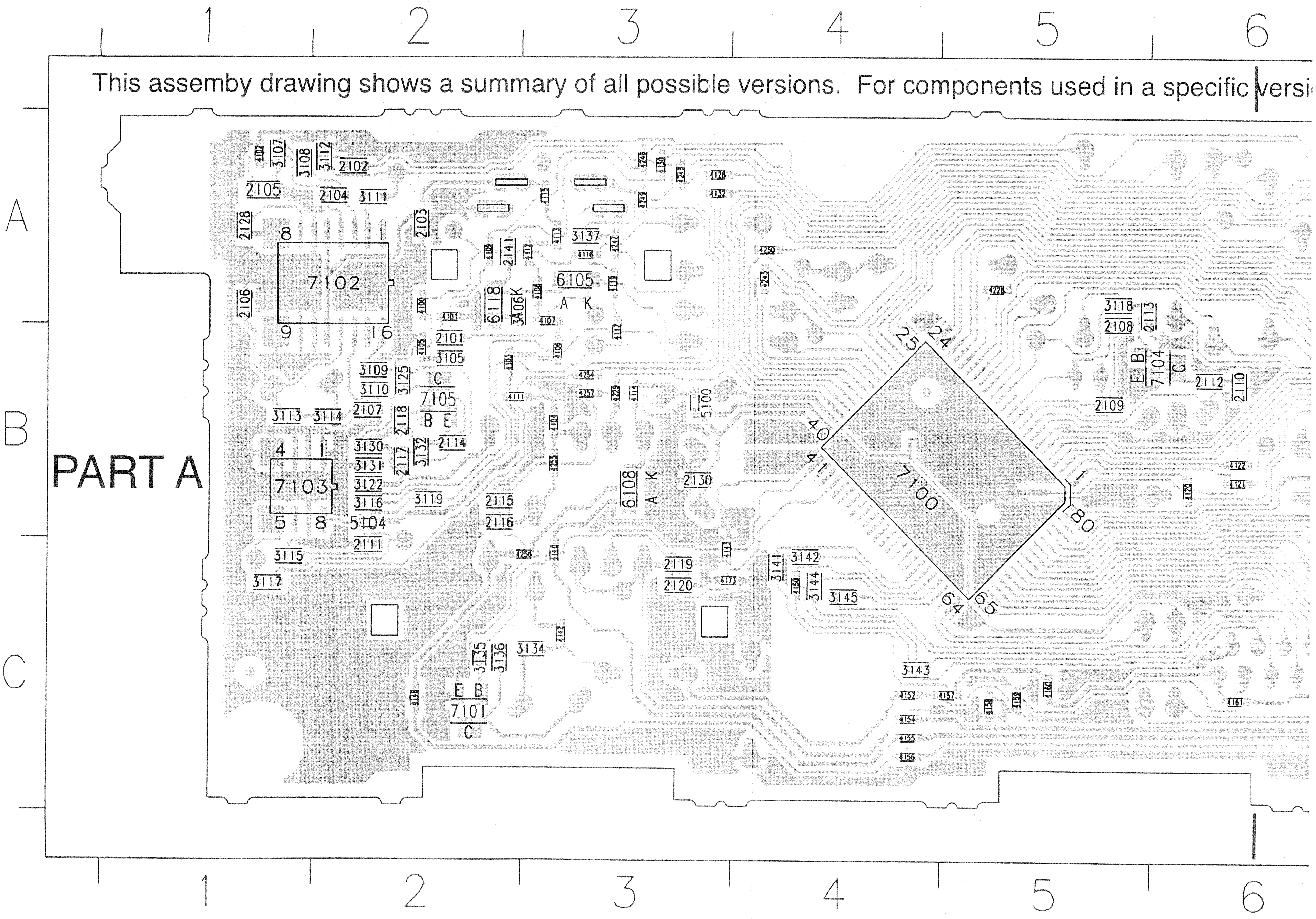

1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
FE-ST-VK-N
1107
+D
GND_BZ
3134 100R
6104 LTL-816TDK3
3136 68R
3135 1K
7101 BC847B
VU_LED
LED-
3101 68R
3102 68R
3100 1K
3103 1K
LCM_Dim
7106 BC847B
7107 BC847B
LCM_BackLit
7100
TMP88CU74F
8-Bit h. break. v. out w. latch P8
8-Bit high breakdown voltage output port with latch P7
8-Bit high breakdown v. output port with latch P6
80k pull down
P6-P9 source open drain
VFT driver circuit (automatic display)
8-Bit h. breakdown v. out. port w. latch P9
80k pull down
5-Bit h. breakd v. out w. latch PD
source open drain 80k p.d.
RAM
ROM
Program Counter
CPU
8-Bit A/D Converter
4-Bit In/Output (tri-state) P5
8-Bit Input/Output (tri-state) P4
8-Bit Input/Output (tri-state) P0
8-Bit I/O P2 sink o.drain
8-Bit Input/Output (tri state) P1
3-B. I/O P3 (tristate)
sink o.
drain
VDD
VAREF
VASS
AIN13
AIN12
AIN11
AIN10
AIN7
AIN6
AIN5
AIN4
AIN3
AIN2
AIN1
AIN0
-SCKO
VKK
-SCK1
SI1
XOUT
XIN
-RESET
XTOUT
XTIN
TEST
-STOP
1101
Key1
Key0
LPS_LED
Stdby_LED
RotaryVolB
RotaryVolA
LedShClk
LedShData
LedShStr
Rot_Jog_B
Rot_Jog_A
GND_B
DVD_5V
RC6
+C
+E
3175 10K
3176 1K
3177 10K
5100 2u2
6108 BAS316
+5V6_ECO
2130 100n
2131 47u
6113 1N4003
+5V6
2132 47u
GND_B
TuRdsData
TuData
TuClk
A0
A1
A2
MUX_DET
VU_IN
Options
DVD_On
I2C_Clk3
TC4
3137 4K7
5101
FG-PH16CATS00
3170 10K
3171 10K
3172 10K
3173 10K
I2C_Clk_DVD
I2C_Data_DVD
DVD_IntReq
I2C_Clk2
1104
FMN
1105
I2C_Clk1
I2C_Data
DVD_On
DVD_5V
1106
PowerDown
Mute_Scart
LPC
+5V6_ECO
MUX_DET
MUX_VU
6119 1N4003
For RDS version only
2102 1n0
TuRDS
3107 10K
3108 1K5
7102
SAA6581T
57 Khz BANDPASS (8th ORDER)
POW SUPPL & RESET
CLOCKED COMP
RDS/RBDS DEM
TEST CTRL
OSC & CLK
SIGNAL QUALITY DET
MPX
SCOUT
CIN
TCON
MODE
VDDA
VDDD
VREF
SYNC
RDCL
RDDA
QUAL
VSSA
VSSD
OSCI
OSCO
2103 100n
2104 560p
2105 2u2
2128 560p
3109 1K0
TuRdsClk
3110 10K
3111 1K0
3112 10K
3113 220K
3114 2K2
2106 82p
5105 AT-51
2107 47p
VU_IN
6105 BAT54
2101
3105 470K
6118 BAT54 COL
3106 10K
2141 1n0
MUX_VU
MoOscShift
5102 12MHZ
5103 32K768
2108 22p
2109 22p
2110 2p2
2112 22p
3118 4K7
2113 33p
7104 BC847B
Reset
7103
M24C02
E0
E1
E2
SCL
WC_
VCC
SDA
VSS
5104 2u2
3115 10K
3116 10K
2111 1u0
3117 1K0
3119 1K0
I2C_Data
I2C_Clk1
TuRDS
TuStereo
TuClk
TuData
TuCE
3158 10K
3159 10K
3160 10K
3161 1K0
3162 1K0
2121 100p
TU_GND
3163 1K0
3164 22K
2122 100p
2123 100p
2124 100p
2125 100p
3165 100K
2114 10n
3125 1K0
3130 680K
2117 470n
7105 BC847B
2118 10n
3132
Options
3122 2K7
3131 @ 1K8
6106 1N4003
2115 100n
2116 100n
2119 100n
2120 100n
+5V6
GND_B
TU_GND

@3131 values

not use	MX5500D/37
1K2	MX5500D/21S/33S/35S
3K9	MX5700D/22S/25S
27K	MX5600D/37, MX5700D/21R/21S

8239 210 9500 pt3/4 dd wk0329

FRONT DISPLAY PART - CHIPS LAYOUT PART A

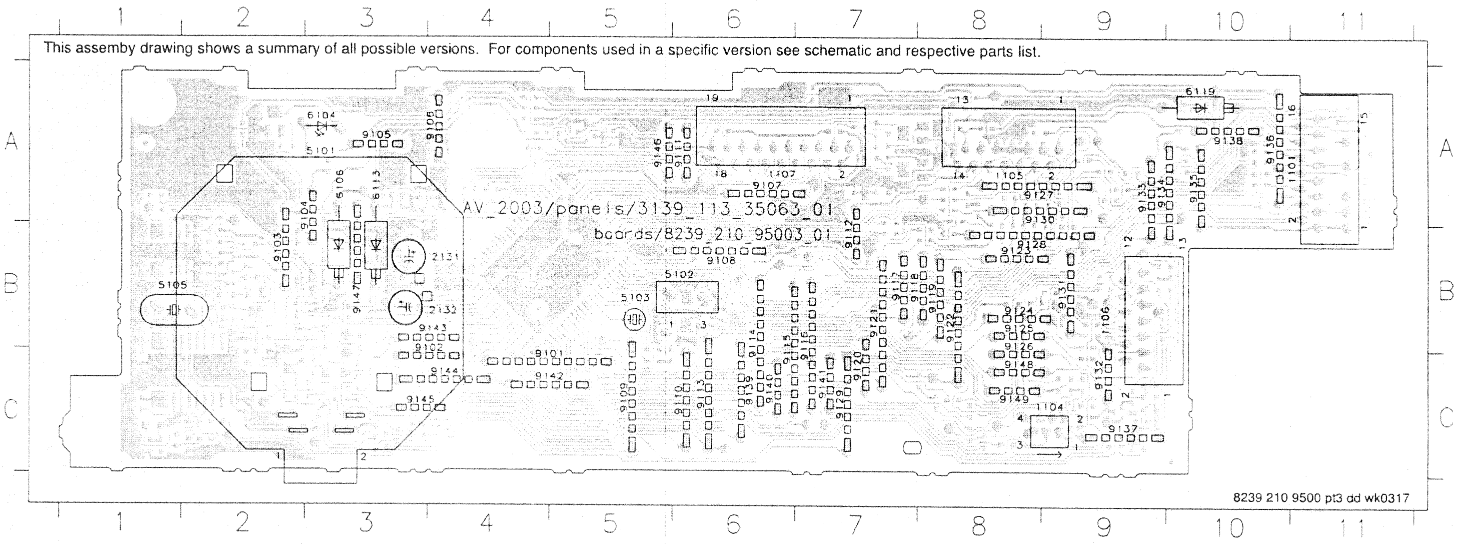


This assemby drawing shows a summary of all possible versions. For components used in a specific versi

1
2
3
4
5
6
A
B
C
PART A
7102
8
1
9
16
7103
4
1
5
8
7100
25
24
40
41
1
80
64
65
7105
C
B E
7101
E B
C
7104
E B
C
6105
A K
6108
A K
6118
3A06
K
5100
5104
2101
2102
2103
2104
2105
2106
2107
2108
2109
2110
2111
2112
2113
2114
2115
2116
2117
2118
2119
2120
2128
2130
2141
3105
3107
3108
3109
3110
3111
3112
3113
3114
3115
3116
3117
3118
3119
3122
3125
3130
3131
3132
3134
3135
3136
3137
3141
3142
3143
3144
3145
4101
4102
4111
4116
4120
4121
4122
4128
4132
4152
4153
4154
4155
4156
4157
4161
4173
4228
4250
4253
4254
4256
4257

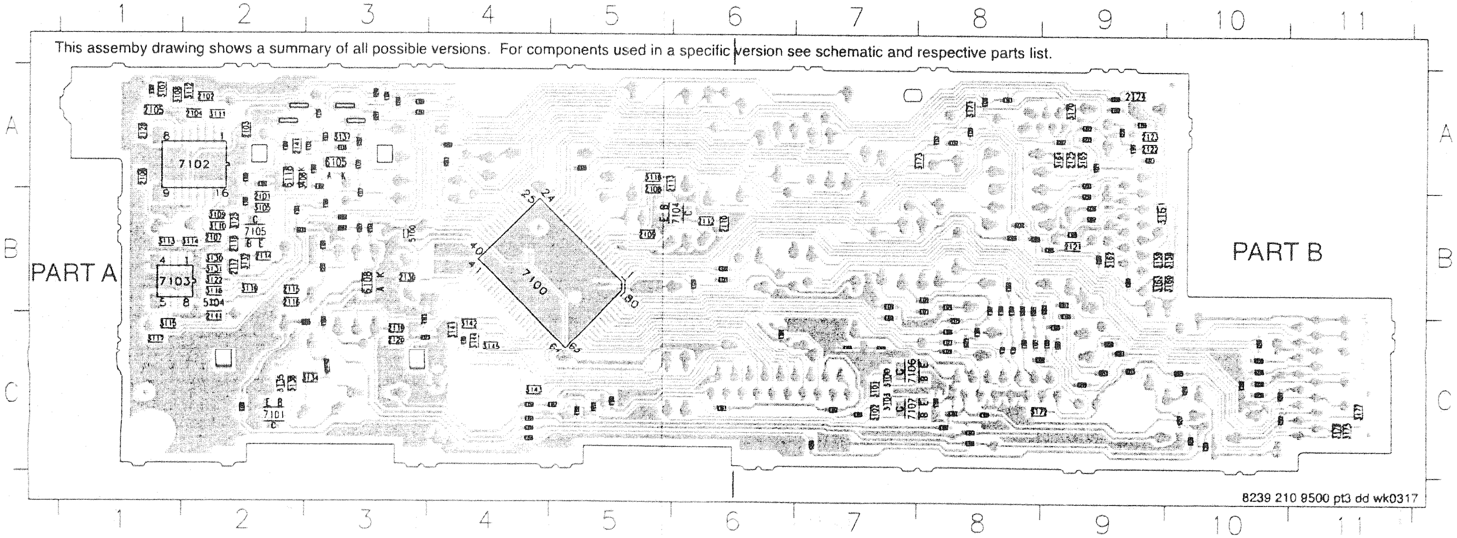
FRONT DISPLAY PART - COMPONENT
& CHIPS LAYOUT

1101	A11
1104	C9
1105	A8
1106	B9
1107	A6
2131	B4
2132	B4
5101	A3
5102	B6
5103	B5
5105	B1
6104	A3
6106	A3
6113	A3
6119	A10
9101	C4
9102	B4
9103	B2
9104	A2
9105	A3
9106	A4
9107	A6
9108	B6
9109	C5
9110	C6
9111	A6
9112	B7
9113	C6
9114	B6
9115	B6
9116	B7
9117	B7
9118	B7
9119	B8
9120	C7
9121	B7
9122	B8
9123	B8
9124	B8
9125	B8
9126	B8
9127	A8
9128	B8
9129	C7
9130	A8
9131	B9
9132	C9
9133	A9
9134	A9
9135	A10
9136	A10
9137	C9
9138	A10
9139	C6
9140	C6
9141	C7
9142	C4
9143	B4
9144	C4
9145	C3
9146	A5
9147	B3
9148	C8
9149	C8


1
2
3
4
5
6
7
8
9
10
11
A
B
C
6119
6104
9105
5101
9106
9146
9110
9107
19
1
13
1
18
1107
2
14
1105
2
9127
9130
9128
9129
9138
9136
1101
16
15
2
1
9135
9134
9133
12
13
9104
9103
6106
6113
2131
2132
9147
5105
9143
9102
9144
9145
AV_2003/panels/3139_113_35063_01
boards/8239_210_95003_01
9112
9108
5102
5103
1
3
9101
9142
9109
9113
9114
9115
9116
9139
9141
9120
9111
9117
9118
9119
9121
9122
9123
9124
9125
9126
9131
9148
9149
1106
9132
1104
9137
4
2
3
1
1
2
8239 210 9500 pt3 dd wk0317

This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

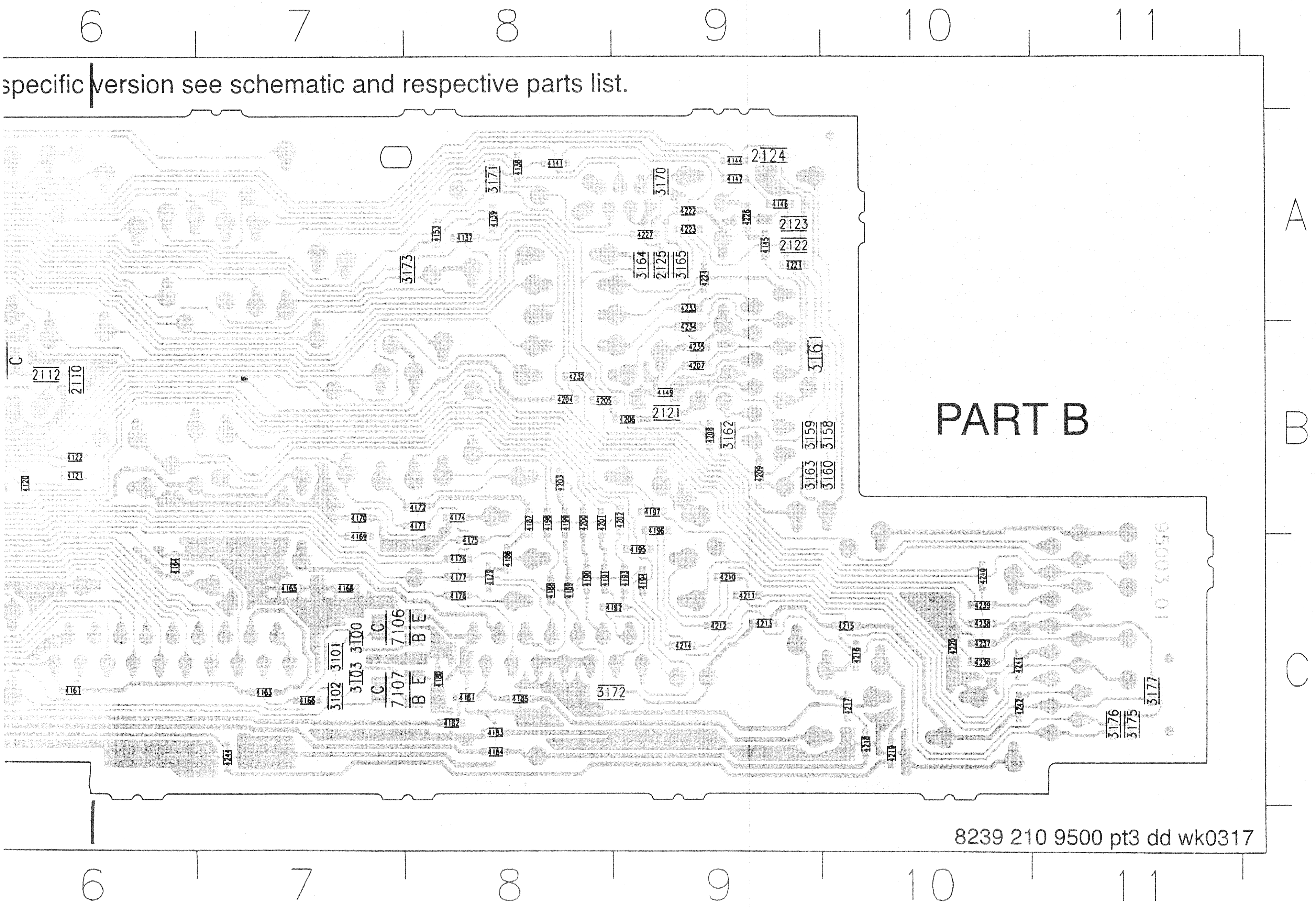
2101	B2
2102	A2
2103	A2
2104	A2
2105	A1
2106	A1
2107	B2
2108	A5
2109	B5
2110	B6
2111	C2
2112	B6
2113	A5
2114	B2
2115	B2
2116	B2
2117	B2
2118	B2
2119	C3
2120	C3
2121	B9
2122	A9
2123	A9
2124	A9
2125	A9
2128	A1
2130	B3
2141	A2
3100	C7
3101	C7
3102	C7
3103	C7
3105	B2
3106	A2
3107	A1
3108	A1
3109	B2
3110	B2
3111	A2
3112	A2
3113	B1
3114	B2
3115	C1
3116	B2
3117	C1
3118	A5
3119	B2
3122	B2
3125	B2
3130	B2
3131	B2
3132	B2
3134	C3
3135	C2
3136	C2
3137	A3
3141	C4
3142	C4
3143	C4
3144	C4
3145	C4
3158	B10
3159	B9
3160	B10
3161	B9
3162	B9
3163	B9
3164	A9
3165	A9
3170	A9
3171	A8
3172	C8
3173	A8
3175	C11
3176	C11
3177	C11
4100	A2
4101	A2
4102	A1
4103	B2
4104	B3
4105	B2
4106	B3
4107	A3
4108	A3
4109	A2
4111	B2
4112	A3
4113	A3
4114	B3
4115	A3
4116	A3
4117	B3
4119	A3
4120	B6
4121	B6
4122	B6
4128	A3
4130	A3
4132	A3
4137	A8
4138	A8
4139	A8
4140	C3
4141	A8
4142	C3
4143	C3
4144	A9
4145	A9
4146	A9
4147	A9
4148	C2
4149	B9
4150	C4
4152	C4
4153	A8
4154	C4
4155	C4
4156	C4
4157	C5
4158	C5
4159	C5
4160	C5
4161	C6
4163	C7
4164	C6
4165	C7
4166	C7
4168	C7
4169	C7
4170	B7
4171	B8
4172	B8
4173	C3
4174	B8
4175	C8
4176	C8
4177	C8
4178	C8
4179	C8
4180	C8
4181	C8
4182	C8
4183	C8
4184	C8
4185	C8
4186	C8
4187	B8
4188	C8
4189	C8
4190	C8
4191	C8
4192	C9
4193	C9
4194	C9
4195	C9
4196	B9
4197	B9
4198	B8
4199	B8
4200	B8
4201	B8
4202	B9
4203	B8
4204	B8
4205	B8
4206	B9
4207	B9
4208	B9
4209	B9
4210	C9
4211	C9
4212	C9
4213	C9
4214	C9
4215	C10
4216	C10
4217	C10
4218	C10
4219	C10
4220	C10
4221	A9
4222	A9
4223	A9
4224	A9
4226	A9
4227	A9
4228	A5
4229	B3
4232	B8
4233	A9
4234	B9
4235	B9
4236	C10
4237	C10
4238	C10
4239	C10
4240	C10
4241	C10
4242	C10
4243	A4
4244	C7
4245	A3
4246	A3
4247	A3
4249	A3
4250	A4
4254	B3
4255	B3
4256	C3
4257	B3
5100	B3
5104	B2
6105	A3
6108	B3
6118	A2
7100	B4
7101	C2
7102	A2
7103	B1
7104	B6
7105	B2
7106	C7
7107	C7


1
2
3
4
5
6
7
8
9
10
11
A
B
C
PART A
PART B
7102
7103
7105
6105
6118
6108
7100
25
24
40
41
80
64
65
7104
7101
7106
7107
2105
8239 210 9500 pt3 dd wk0317

This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

FRONT DISPLAY PART - CHIPS LAYOUT PART B

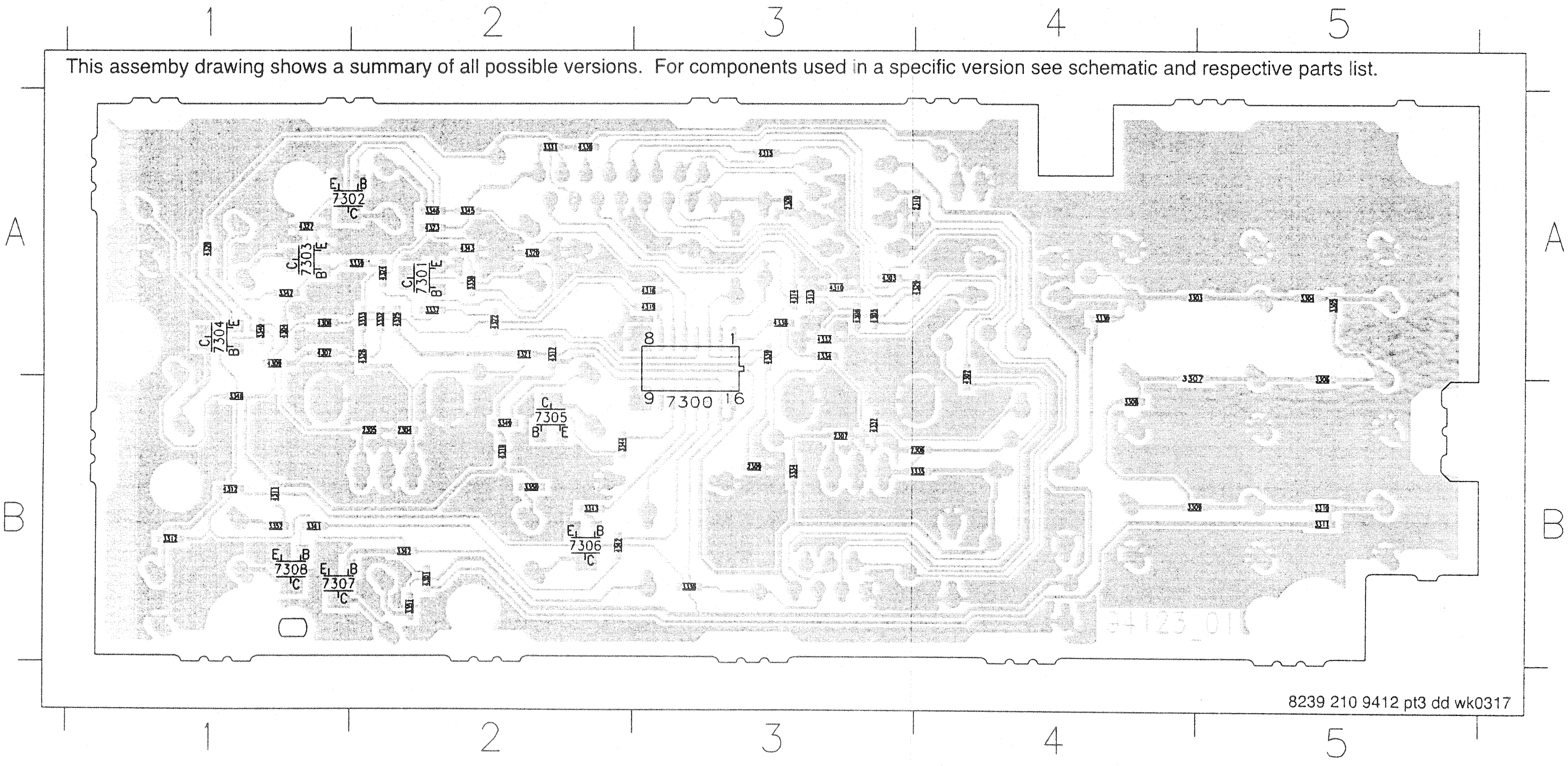
specific version see schematic and respective parts list.


6
7
8
9
10
11
A
B
C
PART B
2124
2123
2122
3170
3171
3173
3164
2125
3165
3161
2121
3162
3159
3158
3163
3160
2112
2110
3101
3100
3103
3102
7106
7107
C
B
E
3172
3177
3176
3175
95003 01

8239 210 9500 pt3 dd wk0317

FRONT CONTROL PART - CHIPS LAYOUT

2304	B2
2305	B2
2306	B4
2307	B3
2308	A3
2309	B3
2310	A4
3303	A4
3304	A5
3305	A5
3306	A5
3307	A4
3308	B4
3309	B4
3310	B5
3311	B5
3312	B1
3330	A4
3331	A2
3332	A2
3333	A2
3334	B3
3335	B4
3336	B3
3337	A2
3338	A2
3339	A2
3340	A1
3341	B1
3342	B2
3343	B2
3344	B2
3345	A2
3346	A2
3347	A1
3348	B1
3349	B2
3350	B2
3351	B2
3352	B1
4301	B2
4302	A4
4303	A3
4304	A1
4305	A3
4306	A1
4307	A1
4308	A3
4309	A1
4310	A3
4311	B1
4312	B1
4313	A3
4314	A3
4315	A3
4316	A3
4317	A2
4318	B2
4319	A3
4320	A2
4321	A2
4322	A2
4323	A2
4324	A2
4325	A2
4326	A2
4327	A1
4328	A1
4329	A4
4330	A2
4332	A3
4334	A3
4337	B3
4338	A3
4339	A3
4342	B2
4343	A2
7300	B3
7301	A2
7302	A1
7303	A1
7304	A1
7305	B2
7306	B2
7307	B1
7308	B1

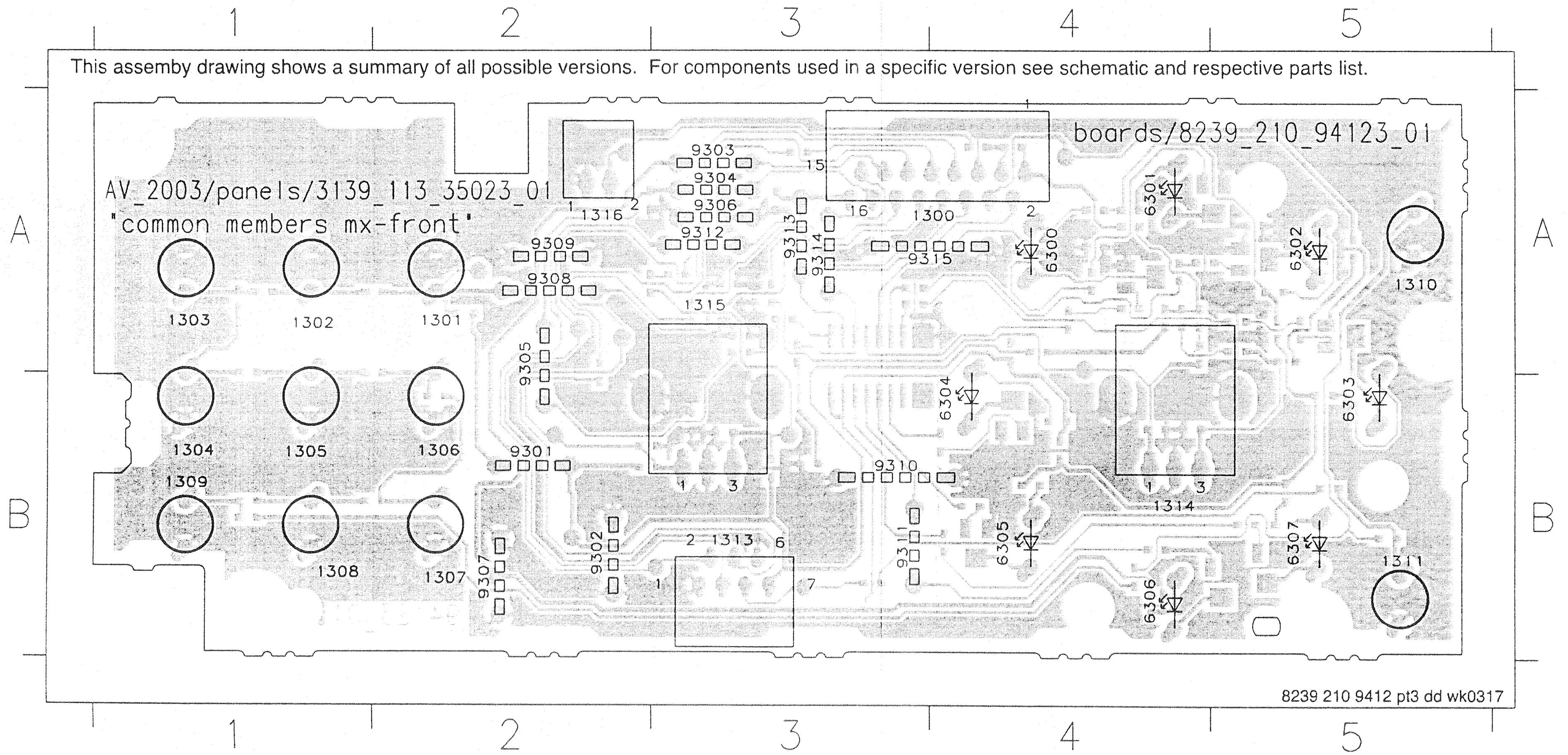

1
2
3
4
5
A
B
7302
7303
7301
7304
8
1
9
7300
16
7305
7306
7308
7307
3307
3306
3301
3304
3309
3310
3311
94123_01

This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

8239 210 9412 pt3 dd wk0317

FRONT CONTROL PART - COMPONENT LAYOUT

1300	A4	1304	B1	1308	B1	1313	B3	6300	A4	6304	B4	9301	B2	9305	A2	9309	A2	9313	A3
1301	A2	1305	B1	1309	B1	1314	B4	6301	A4	6305	B4	9302	B2	9306	A3	9310	B3	9314	A3
1302	A1	1306	B2	1310	A5	1315	A3	6302	A5	6306	B4	9303	A3	9307	B2	9311	B3	9315	A4
1303	A1	1307	B2	1311	B5	1316	A2	6303	B5	6307	B5	9304	A3	9308	A2	9312	A3		

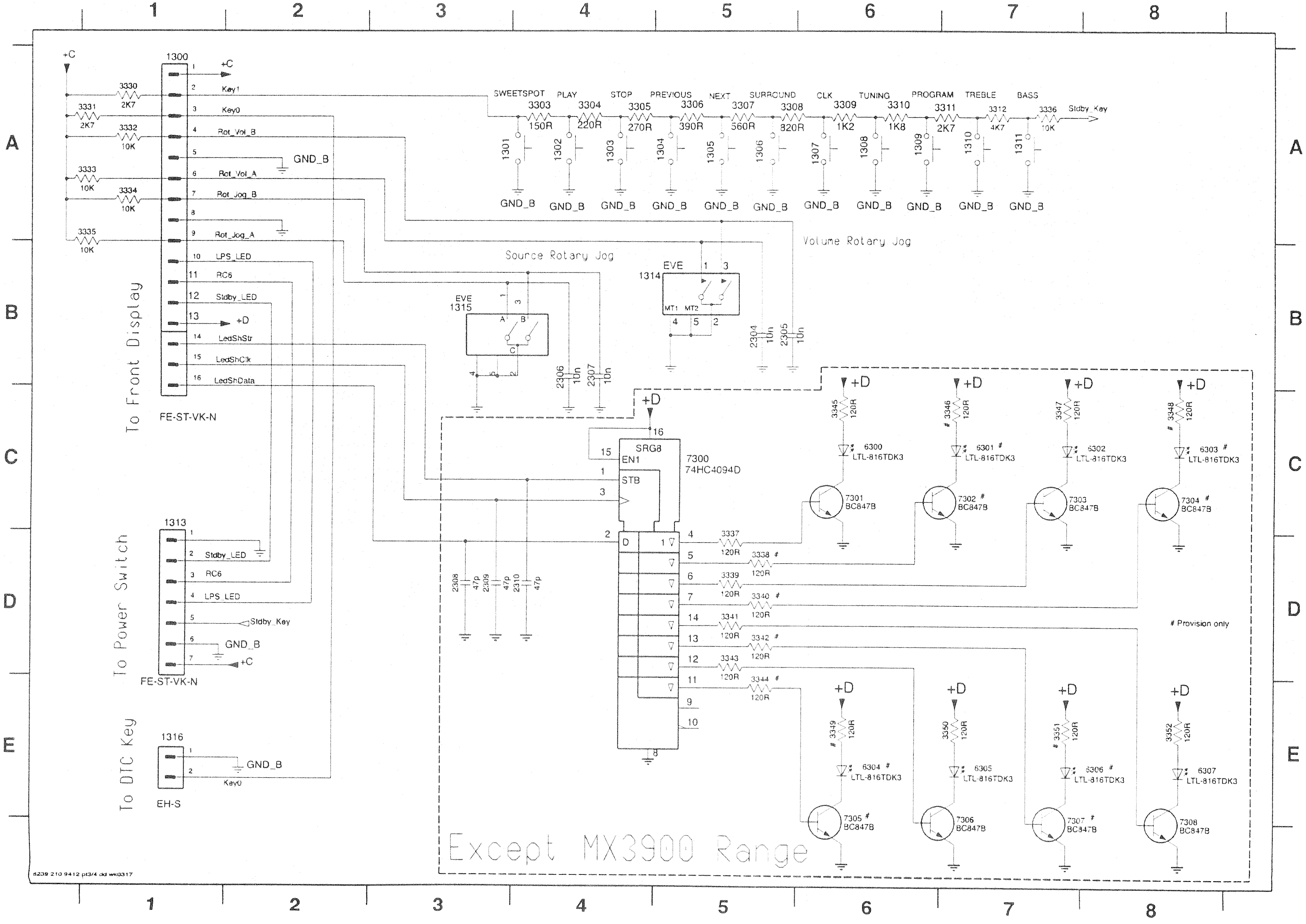

1
2
3
4
5
A
B
boards/8239_210_94123_01
AV_2003/panels/3139_113_35023_01
'common members mx-front'
1300
1301
1302
1303
1304
1305
1306
1307
1308
1309
1310
1311
1313
1314
1315
1316
6300
6301
6302
6303
6304
6305
6306
6307
9301
9302
9303
9304
9305
9306
9307
9308
9309
9310
9311
9312
9313
9314
9315
15
16
2
1
3
6
7

This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

8239 210 9412 pt3 dd wk0317

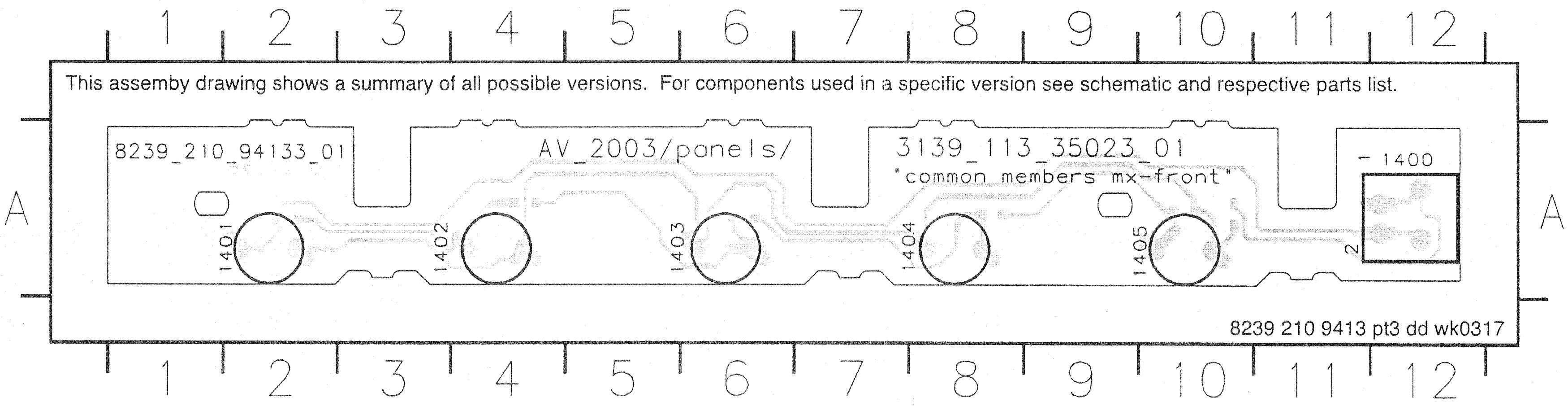
FRONT CONTROL PART - CIRCUIT DIAGRAM

1300 A1	1304 A5	1308 A6	1313 C1	2304 B5	2308 D3	3304 A4	3308 A5	3312 A7	3333 A1	3337 D5	3341 D5	3345 C6	3349 E6	6300 C6	6304 E6	7300 C5	7304 C8	7308 E8	
1301 A3	1305 A5	1309 A6	1314 B4	2305 B5	2309 D3	3305 A4	3309 A6	3330 A1	3334 A1	3338 D5	3342 D5	3346 C7	3350 E7	6301 C7	6305 E7	7301 C6	7305 E6		
1302 A4	1306 A5	1310 A7	1315 B3	2306 B4	2310 D4	3306 A5	3310 A6	3331 A1	3335 A1	3339 D5	3343 D5	3347 C7	3351 E7	6302 C8	6306 E8	7302 C7	7306 E7		
1303 A4	1307 A6	1311 A7	1316 E1	2307 B4	3303 A4	3307 A5	3311 A7	3332 A1	3336 A7	3340 D5	3344 E5	3348 C8	3352 E8	6303 C8	6307 E8	7303 C7	7307 E7		


1
2
3
4
5
6
7
8
A
B
C
D
E
+C
1300
3330
2K7
3331
2K7
3332
10K
3333
10K
3334
10K
3335
10K
Key1
Key0
Rot_Vol_B
GND_B
Rot_Vol_A
Rot_Jog_B
Rot_Jog_A
LPS_LED
RC6
Stdby_LED
+D
LedShStr
LedShClk
LedShData
To Front Display
FE-ST-VK-N
SWEETSPOT
PLAY
STOP
PREVIOUS
NEXT
SURROUND
CLK
TUNING
PROGRAM
TREBLE
BASS
3303
150R
3304
220R
3305
270R
3306
390R
3307
560R
3308
820R
3309
1K2
3310
1K8
3311
2K7
3312
4K7
3336
10K
Stdby_Key
1301
1302
1303
1304
1305
1306
1307
1308
1309
1310
1311
GND_B
Source Rotary Jog
Volume Rotary Jog
EVE
1314
MT1
MT2
EVE
1315
A
B
C
2304
10n
2305
10n
2306
10n
2307
10n
7300
74HC4094D
SRG8
EN1
STB
D
3337
120R
3338 #
120R
3339
120R
3340 #
120R
3341
120R
3342 #
120R
3343
120R
3344 #
120R
2308
47p
2309
47p
2310
47p
1313
Stdby_LED
RC6
LPS_LED
Stdby_Key
GND_B
+C
To Power Switch
FE-ST-VK-N
1316
GND_B
Key0
To DTC Key
EH-S
3345
120R
# 3346
120R
3347
120R
# 3348
120R
6300
LTL-816TDK3
6301 #
LTL-816TDK3
6302
LTL-816TDK3
6303 #
LTL-816TDK3
7301
BC847B
7302 #
BC847B
7303
BC847B
7304 #
BC847B
# Provision only
# 3349
120R
3350
120R
# 3351
120R
3352
120R
6304 #
LTL-816TDK3
6305
LTL-816TDK3
6306 #
LTL-816TDK3
6307
LTL-816TDK3
7305 #
BC847B
7306
BC847B
7307 #
BC847B
7308
BC847B
Except MX3900 Range
3139 210 9412 pt3/4 dd wk0317

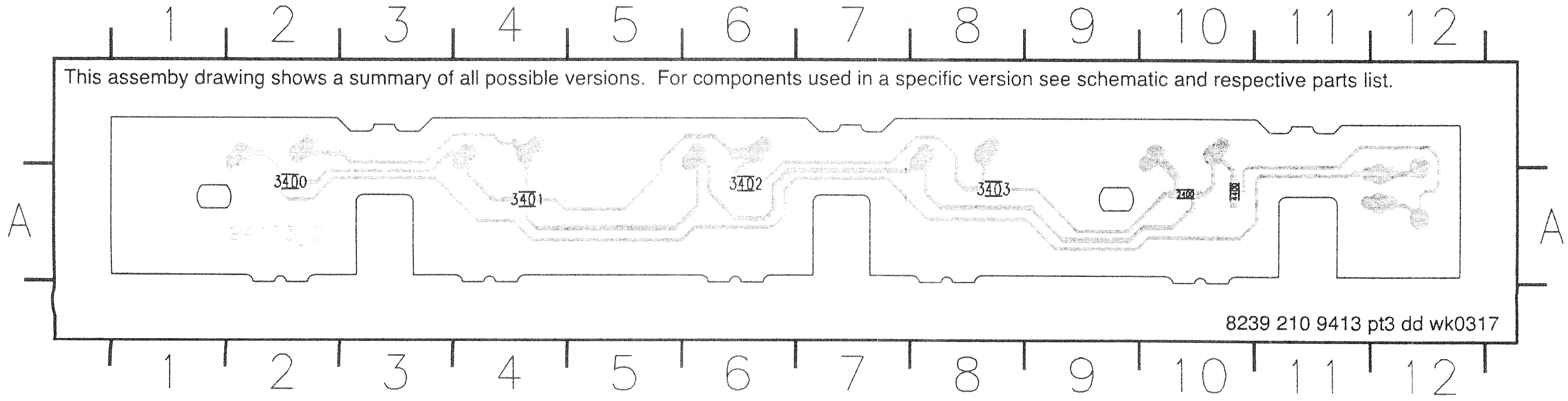
DTC KEY PART - COMPONENT & CHIP LAYOUTS

1400	A12
1401	A2
1402	A3
1403	A5
1404	A7
1405	A10


This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

8239 210 9413 pt3 dd wk0317
1 2 3 4 5 6 7 8 9 10 11 12
A
8239_210_94133_01
AV_2003/panels/
3139_113_35023_01
"common members mx-front"
1400
1401
1402
1403
1404
1405
2

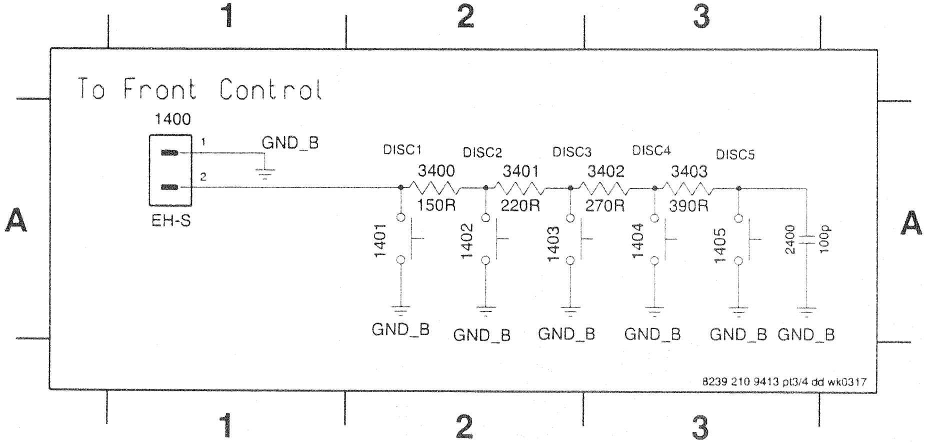
2400	A10
3400	A2
3401	A4
3402	A6
3403	A8
4400	A10


This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

8239 210 9413 pt3 dd wk0317
1 2 3 4 5 6 7 8 9 10 11 12
A
3400
3401
3402
3403
2400
4400

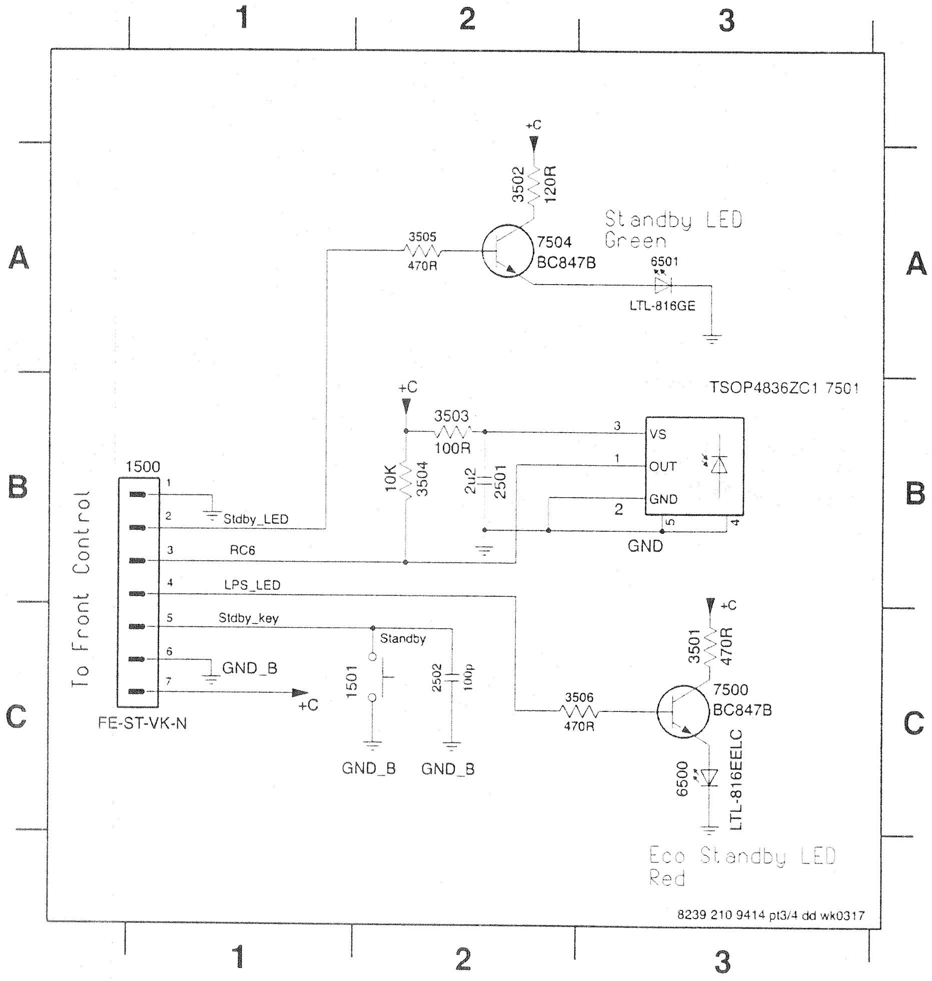
DTC KEY PART - CIRCUIT DIAGRAM

1400 A1	1402 A2	1404 A3	2400 A3	3401 A2	3403 A3
1401 A2	1403 A2	1405 A3	3400 A2	3402 A3	


1
2
3
A
To Front Control
1400
1
2
GND_B
EH-S
DISC1
DISC2
DISC3
DISC4
DISC5
3400
150R
3401
220R
3402
270R
3403
390R
1401
1402
1403
1404
1405
2400
100p
GND_B
GND_B
GND_B
GND_B
GND_B
GND_B
8239 210 9413 pt3/4 dd wk0317

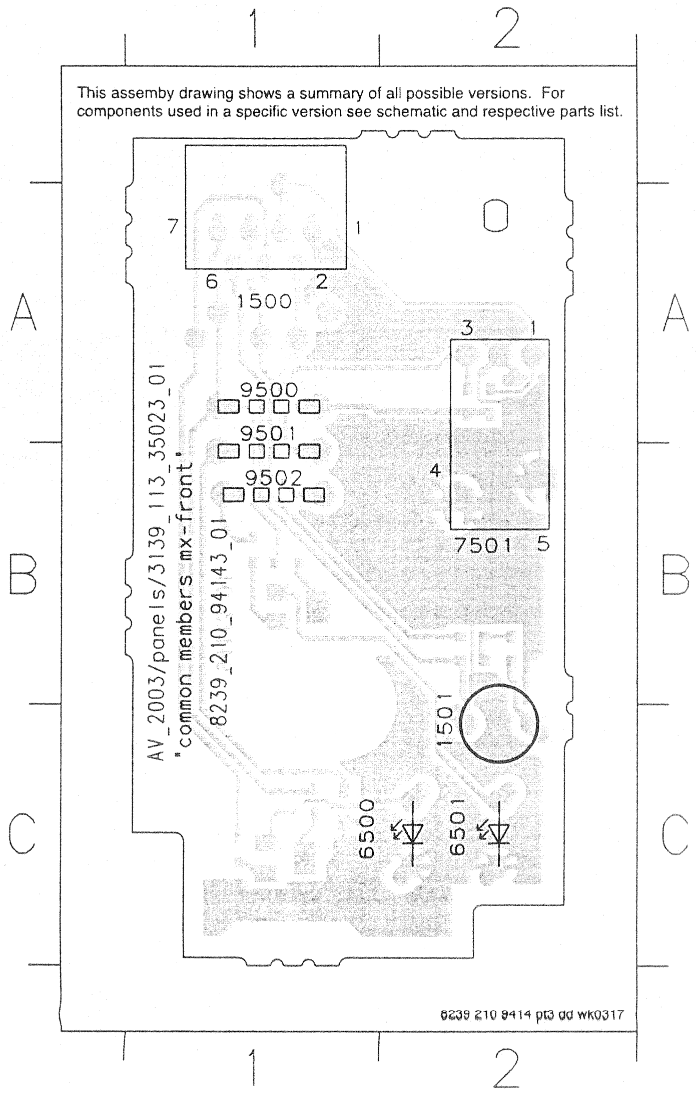
POWER SWITCH PART - CIRCUIT DIAGRAM

1500 B1	2501 B2	3501 C3	3503 B2	3505 A2	6500 C3	7500 C3	7504 A2
1501 C1	2502 C2	3502 A2	3504 B2	3506 C3	6501 A3	7501 B3	


1
2
3
A
B
C
+C
3502
120R
3505
470R
7504
BC847B
Standby LED
Green
6501
LTL-816GE
+C
TSOP4836ZC1 7501
3503
100R
10K
3504
2u2
2501
VS
OUT
GND
3
1
2
5
4
GND
1500
To Front Control
1
2
3
4
5
6
7
Stdby_LED
RC6
LPS_LED
Stdby_key
GND_B
+C
FE-ST-VK-N
Standby
1501
2502
100p
GND_B
GND_B
+C
3501
470R
7500
BC847B
3506
470R
6500
LTL-816EELC
Eco Standby LED
Red
8239 210 9414 pt3/4 dd wk0317

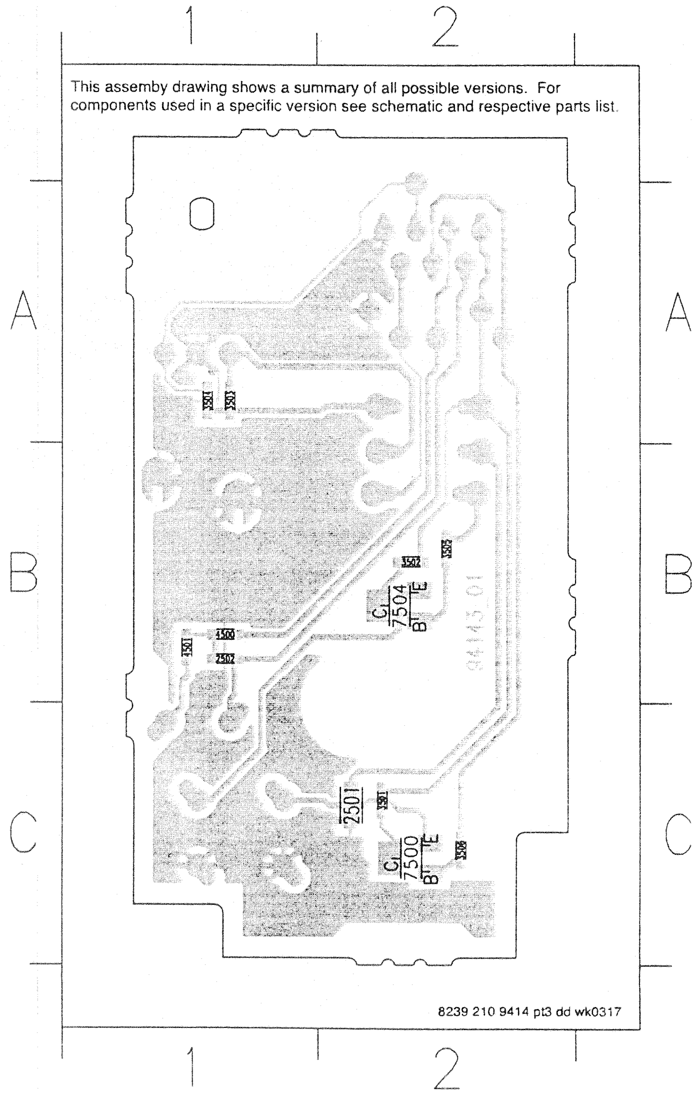
POWER SWITCH PART - COMPONENT & CHIPS LAYOUT

1500	A1	6500	C1	7501	B2	9501	A1
1501	C2	6501	C2	9500	A1	9502	B1


This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

1
2
A
B
C
7
1
6
2
1500
3
1
9500
9501
9502
4
7501
5
AV_2003/panels/3139_113_35023_01
"common members mx-front"
8239_210_94143_01
1501
6500
6501
8239 210 9414 pt3 dd wk0317

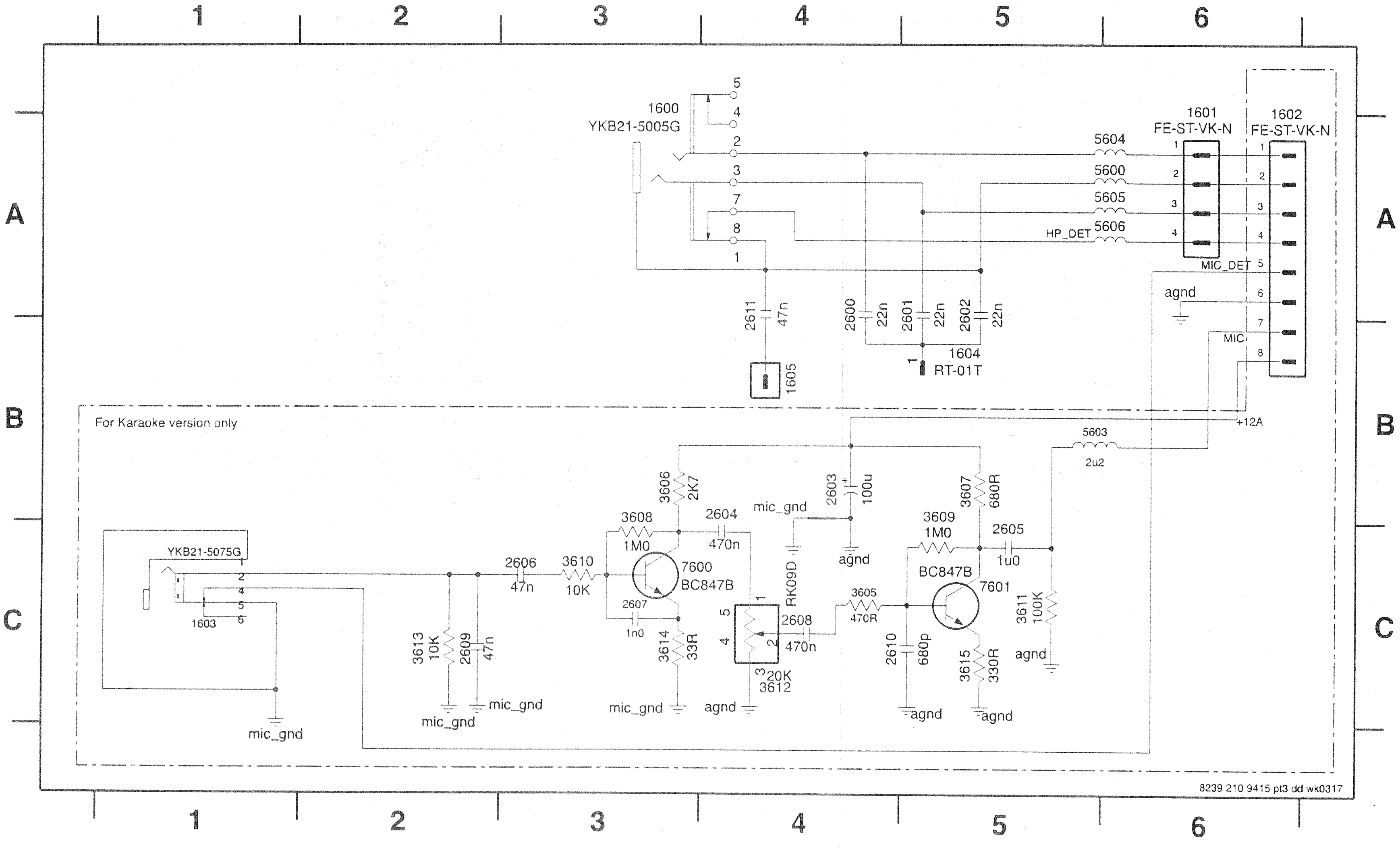
2501	C2	3502	B2	3505	B2	4501	B1
2502	B1	3503	A1	3506	C2	7500	C2
3501	C2	3504	A1	4500	B1	7504	B2


This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

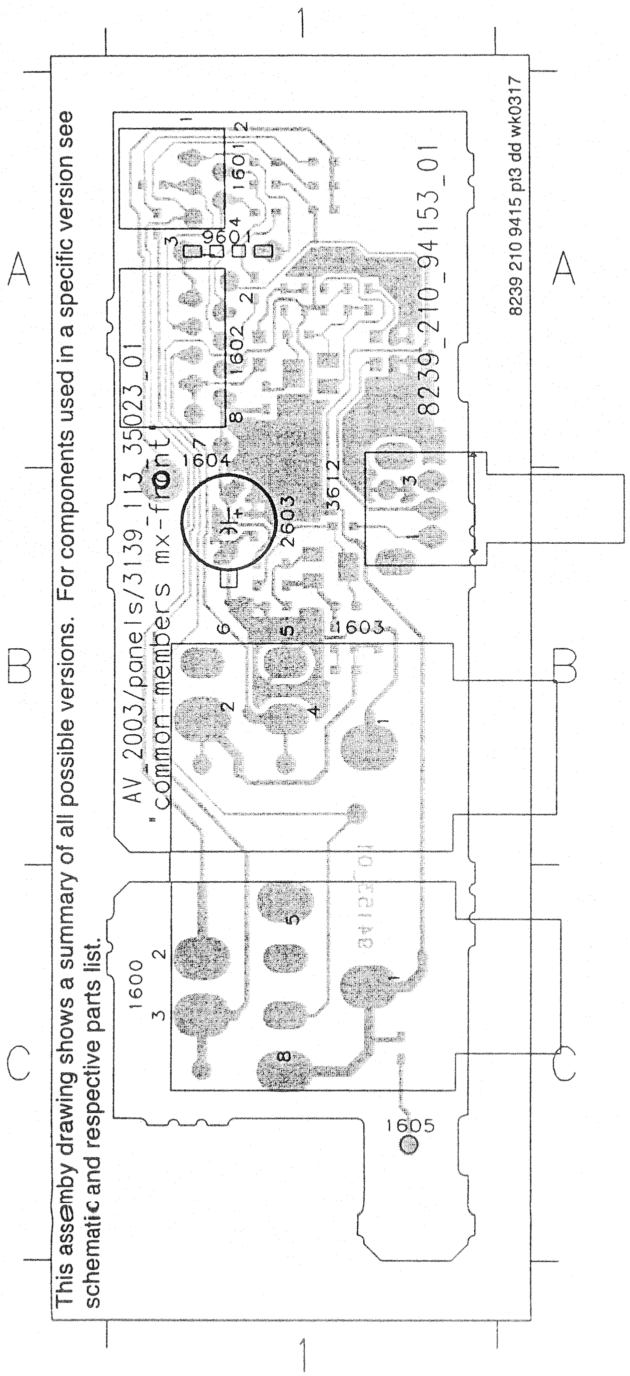
1
2
A
B
C
3504
3503
3502
3505
C
7504
B
E
94143_01
4501
4500
2502
2501
3501
C
7500
B
E
3506
8239 210 9414 pt3 dd wk0317

HDPH & MIC PART - CIRCUIT DIAGRAM (For non-Karaoke version pt 3 pcb only)

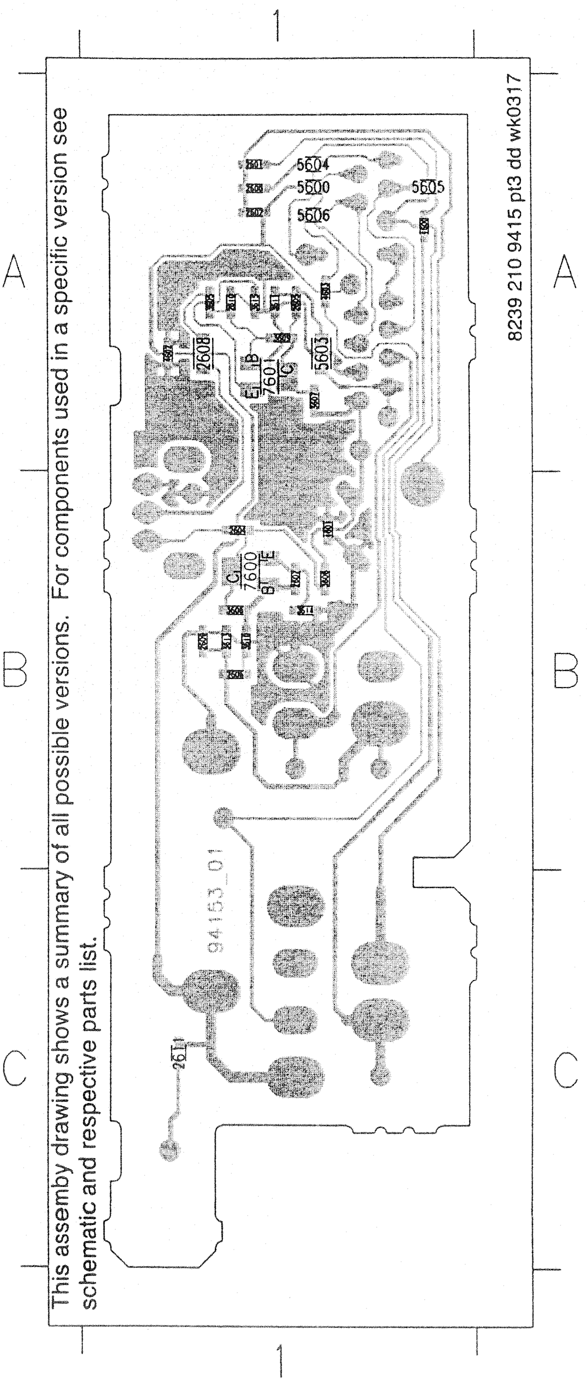
1600 A3	1602 A6	1604 B5	2600 A4	2602 A5	2604 B4	2606 C3	2608 C4	2610 C4	3605 C4	3607 B5	3609 B5	3611 C5	3613 C2	3615 C5	5603 B5	5605 A6	7600 C3
1601 A6	1603 C1	1605 B4	2601 A5	2603 B4	2605 C5	2607 C3	2609 C2	2611 A4	3606 B3	3608 C3	3610 C3	3612 C4	3614 C3	5600 A6	5604 A6	5606 A6	7601 C5


1
2
3
4
5
6
A
B
C
1600
YKB21-5005G
5
4
2
3
7
8
1
2611 47n
1605
2600 22n
2601 22n
2602 22n
1604
RT-01T
5604
5600
5605
HP_DET
5606
1601
FE-ST-VK-N
1602
FE-ST-VK-N
MIC_DET
agnd
MIC
+12A
For Karaoke version only
YKB21-5075G
1603
mic_gnd
3613 10K
2609 47n
2606 47n
3610 10K
3608 1M0
3606 2K7
2604 470n
7600
BC847B
2607 1n0
3614 33R
RK09D
2608 470n
20K 3612
2603 100u
3605 470R
2610 680p
3607 680R
3609 1M0
2605 1u0
BC847B
7601
3611 100K
3615 330R
5603 2u2
8239 210 9415 pt3 dd wk0317

HDPH & MIC PART - COMPONENT & CHIP LAYOUTS (For non-Karaoke version pt 3 pcb only)


This assembly drawing shows a summary of all possible versions. For components used in a specific version see
schematic and respective parts list.
AV_2003/panels/3139_113_35023_01
"common members mx-front"
8239_210_94153_01
8239 210 9415 pt3 dd wk0317
1600
1601
1602
1603
1604
1605
2603
3612
9601
A
B
C
1

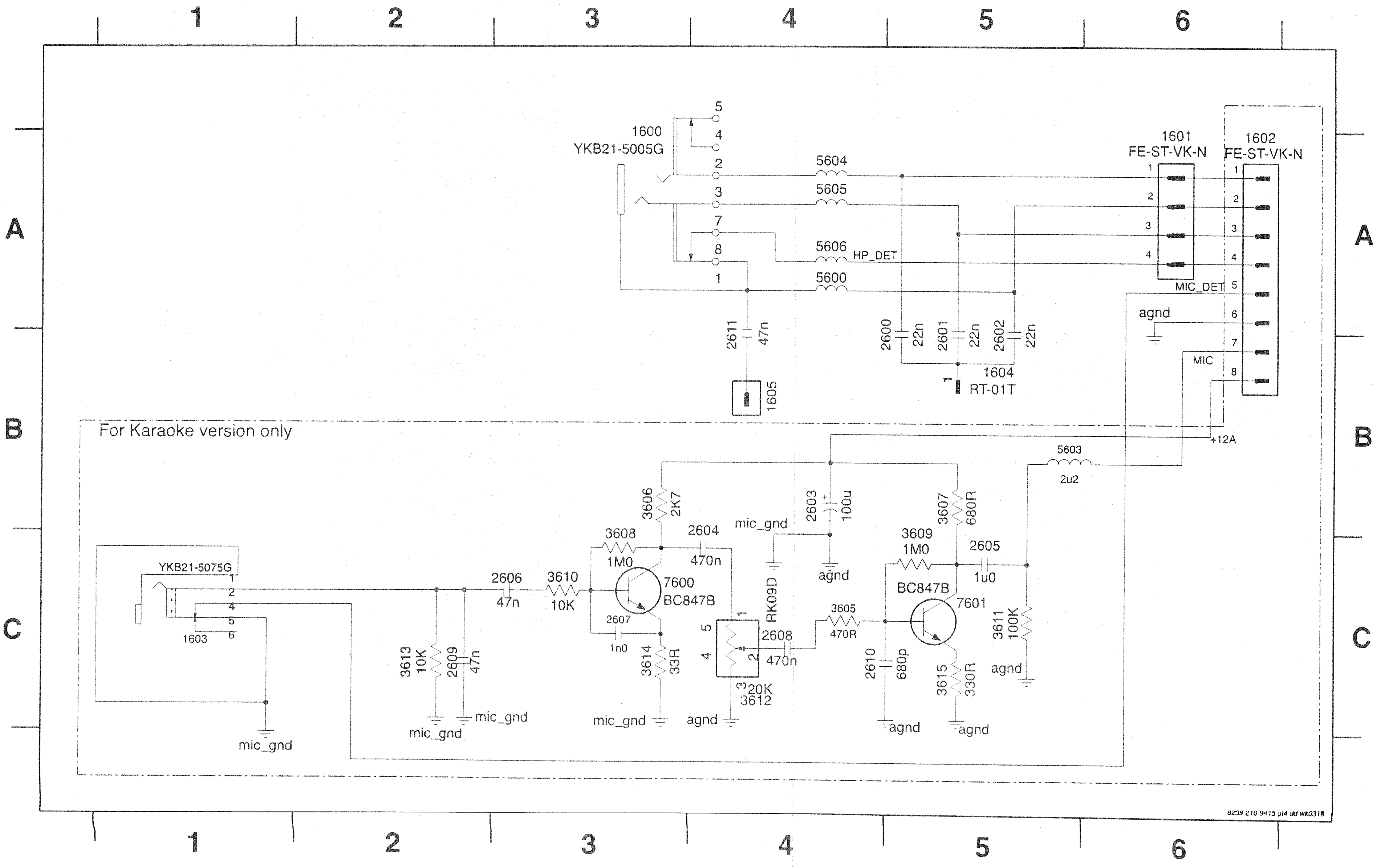
1600	C1
1601	A1
1602	A1
1603	B1
1604	A1
1605	C1
2603	B1
3612	B1
9601	A1


This assembly drawing shows a summary of all possible versions. For components used in a specific version see
schematic and respective parts list.
8239 210 9415 pt3 dd wk0317
94153_01
5604
5600
5606
5605
5603
2608
7601
7600
2611
A
B
C
1

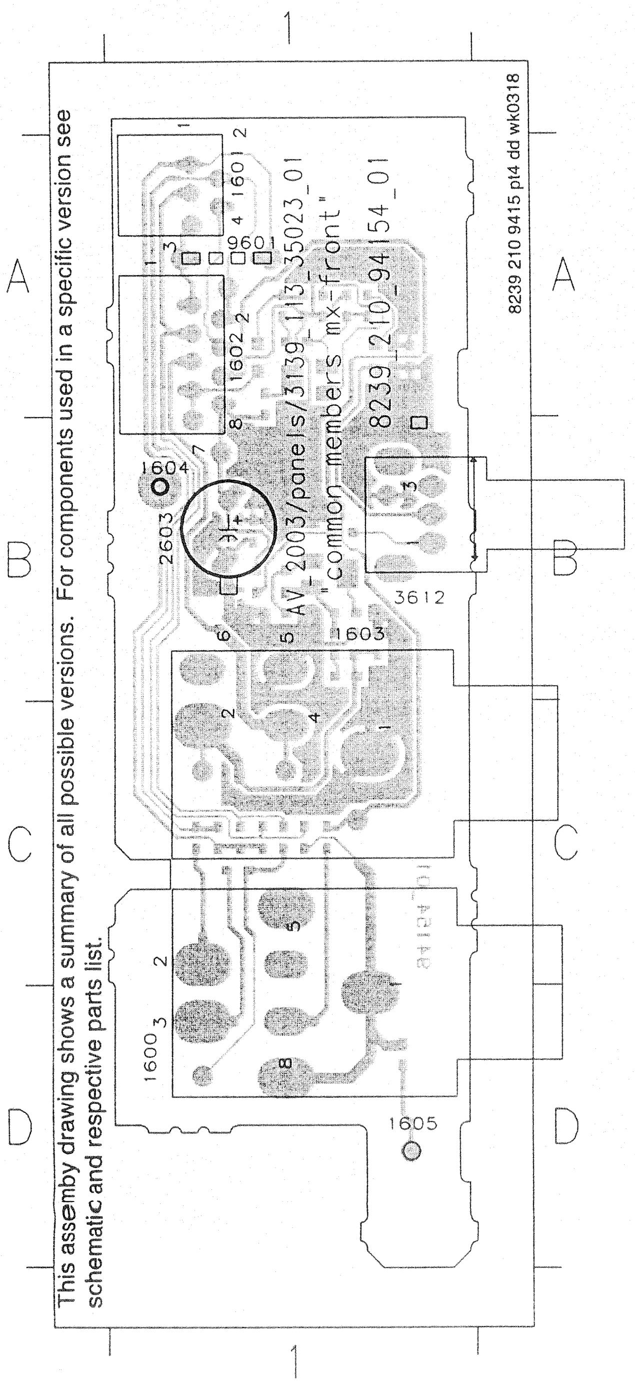
2600	A1
2601	A1
2602	A1
2604	B1
2605	A1
2606	B1
2607	B1
2608	A1
2609	B1
2610	A1
2611	C1
3605	A1
3606	B1
3607	A1
3608	B1
3609	A1
3610	B1
3611	A1
3613	B1
3614	B1
3615	A1
4600	A1
4601	B1
4602	A1
4603	A1
5600	A1
5603	A1
5604	A1
5605	A1
5606	A1
7600	B1
7601	A1

HDPH & MIC PART - CIRCUIT DIAGRAM (For all versions pt 4 pcb)

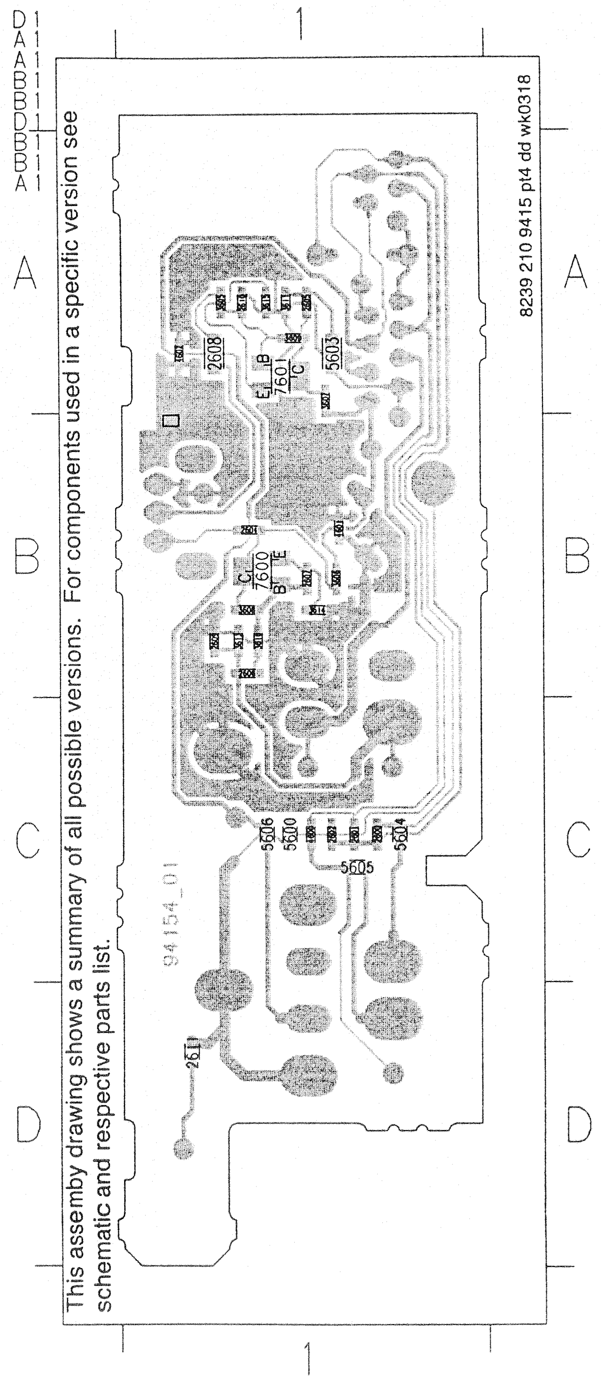
1600 A3	1602 A6	1604 B5	2600 B5	2602 B5	2604 C4	2606 C3	2608 C4	2610 C4	3605 C4	3607 B5	3609 C5	3611 C5	3613 C2	3615 C5	5603 B5	5605 A4	7600 C3
1601 A6	1603 C1	1605 B4	2601 B5	2603 B4	2605 C5	2607 C3	2609 C2	2611 B4	3606 B3	3608 C3	3610 C3	3612 C4	3614 C3	5600 A4	5604 A4	5606 A4	7601 C5


1
2
3
4
5
6
A
B
C
1600
YKB21-5005G
5
4
2
3
7
8
1
5604
5605
5606
HP_DET
5600
2611
47n
1605
2600
22n
2601
22n
2602
22n
1604
RT-01T
1601
FE-ST-VK-N
1602
FE-ST-VK-N
MIC_DET
agnd
MIC
+12A
For Karaoke version only
5603
2u2
YKB21-5075G
1603
3606
2K7
3608
1M0
2604
470n
mic_gnd
2603
100u
agnd
3607
680R
3609
1M0
2605
1u0
2606
47n
3610
10K
7600
BC847B
2607
1n0
RK09D
3612
20K
2608
470n
3605
470R
BC847B
7601
3611
100K
3613
10K
2609
47n
3614
33R
2610
680p
3615
330R
mic_gnd
agnd
8239 210 9415 pt4 dd wk0318

HDPH & MIC PART - COMPONENT & CHIP LAYOUTS (For all versions pt 4 pcb)


This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.
8239 210 9415 pt4 dd wk0318
AV_2003/panels/3139_113_35023_01
"common members mx-front"
8239_210_94154_01
1600
1601
1602
1603
1604
1605
2603
3612
9601
1
A
B
C
D

1600	D1
1601	A1
1602	A1
1603	B1
1604	B1
1605	D1
2603	B1
3612	B1
9601	A1


This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.
8239 210 9415 pt4 dd wk0318
94154_01
2608
2611
5600
5603
5604
5605
5606
7600
7601
1
A
B
C
D

2600	C1
2601	C1
2602	C1
2604	B1
2605	A1
2606	B1
2607	B1
2608	A1
2609	B1
2610	A1
2611	D1
3605	A1
3606	B1
3607	B1
3608	B1
3609	A1
3610	B1
3611	A1
3613	B1
3614	B1
3615	A1
4600	C1
4601	B1
4602	A1
5600	C1
5603	A1
5604	C1
5605	C1
5606	C1
7600	B1
7601	A1

MISCELLANEOUS

	3139 119 00831	LCD Module MX5500D-01	
1101	2422 025 14546	Flex Socket 16P	
1104	2422 025 16979	Flex Socket 4P	
1105	2422 025 14544	Flex Socket 14P	
1106	4822 267 10756	Flex Socket 13P	
1107	4822 265 11545	Flex Socket 19P	
1300	2422 025 14546	Flex Socket 16P	
1301	4822 276 13775	Tact Switch	
1302	4822 276 13775	Tact Switch	
1303	4822 276 13775	Tact Switch	
1304	4822 276 13775	Tact Switch	
1305	4822 276 13775	Tact Switch	
1306	4822 276 13775	Tact Switch	
1307	4822 276 13775	Tact Switch	
1308	4822 276 13775	Tact Switch	
1309	4822 276 13775	Tact Switch	
1310	4822 276 13775	Tact Switch	
1311	4822 276 13775	Tact Switch	
1313	4822 267 10956	Flex Socket 7P	
1314	2422 129 16975	Rot Encoder 12P EVEMC2F2512B B	
1315	2422 129 16974	Rot Encoder 12P EVEGC1F2512B B	
1401	4822 276 13775	Tact Switch	
1402	4822 276 13775	Tact Switch	
1403	4822 276 13775	Tact Switch	
1404	4822 276 13775	Tact Switch	
1405	4822 276 13775	Tact Switch	
1500	4822 267 10956	Flex Socket 7P	
1501	4822 276 13775	Tact Switch	
1600	2422 026 05192	Headphone Socket	
1601	4822 265 11183	Flex Socket 4P	non-kara
1602	4822 265 11535	Flex Socket 8P	kara
1603	2422 026 05372	Mic Socket	kara

CAPACITORS

2101	4822 126 13879	220nF +80/-20% 16V	
2102	3198 016 31020	1nF 25V	RDS
2103	2238 586 59812	100nF +80/-20% 50V	RDS
2104	4822 126 14249	560pF 25V	RDS
2105	4822 126 14491	2,2uF 10V	RDS
2106	4822 126 14226	82pF 50V	RDS
2107	4922 126 11785	47PF 50V	RDS
2108	4822 122 33761	22pF 5% 50V	
2109	4822 122 33761	22pF 5% 50V	
2110	4822 126 14223	2,2pF +/-0,25pF 50V	
2111	3198 017 41050	1uF 10V	
2112	4822 122 33761	22pF 5% 50V	
2113	2222 867 15339	33pF 5% 50V	
2114	5322 126 11583	10nF 10% 50V	
2115	2238 586 59812	100nF +80/-20% 50V	
2116	2238 586 59812	100nF +80/-20% 50V	
2117	3198 017 44740	470nF 10V	
2118	5322 126 11583	10nF 10% 50V	
2119	2238 586 59812	100nF +80/-20% 50V	
2120	2238 586 59812	100nF +80/-20% 50V	
2121	2020 552 94427	100pF 5% 50V	
2122	2020 552 94427	100pF 5% 50V	
2123	2020 552 94427	100pF 5% 50V	
2124	2020 552 94427	100pF 5% 50V	
2125	2020 552 94427	100pF 5% 50V	
2128	4822 126 14249	560pF 25V	RDS
2130	2238 586 59812	100nF +80/-20% 50V	
2131	4822 124 80483	47uF 20% 6,3V	
2132	4822 124 80483	47uF 20% 6,3V	
2141	3198 017 41050	1uF 10V	
2304	5322 126 11583	10nF 10% 50V	
2305	5322 126 11583	10nF 10% 50V	
2306	5322 126 11583	10nF 10% 50V	
2307	5322 126 11583	10nF 10% 50V	
2308	4822 126 11785	47pF 5% 50V	
2309	4822 126 11785	47pF 5% 50V	
2310	4822 126 11785	47pF 5% 50V	
2400	2020 552 94427	100pF 5% 50V	
2501	4822 126 14491	2,2uF 10V 0805	
2502	2020 552 94427	100pF 5% 50V	
2600	2238 916 15641	22nF 10% 25V	
2601	2238 916 15641	22nF 10% 25V	
2602	2238 916 15641	22nF 10% 25V	
2603	4822 124 41643	100uF 20% 16V	kara
2604	3198 017 44740	470nF 10V	kara
2605	3198 017 41050	1uF 10V	kara
2606	3198 017 34730	47nF 16V	kara
2607	3198 016 31020	1nF 25V	kara
2608	4822 126 13482	470nF +80/-20% 16V	kara
2609	3198 017 34730	47nF 16V	kara
2610	3198 016 36810	680pF 25V	kara
2611	3198 017 34730	47nF 16V	

RESISTORS

3100	4822 051 30102	1k 5% 0,062W	
3101	4822 051 30689	68R 5% 0,063W	
3102	4822 051 30689	68R 5% 0,063W	
3103	4822 051 30102	1k 5% 0,062W	
3105	4822 051 30474	470k 5% 0,062W	
3106	4822 051 30103	10k 5% 0,062W	
3107	4822 051 30103	10k 5% 0,062W	RDS
3108	4822 051 30152	1k5 5% 0,062W	RDS
3109	4822 051 30102	1k 5% 0,062W	RDS
3110	4822 051 30103	10k 5% 0,062W	non-RDS
3111	4822 051 30102	1k 5% 0,062W	RDS
3112	4822 051 30103	10k 5% 0,062W	non-RDS
3113	4822 117 12891	220k 5% 0,062W	RDS
3114	4822 051 30222	2k2 5% 0,062W	RDS
3115	4822 051 30103	10k 5% 0,062W	
3116	4822 051 30103	10k 5% 0,062W	
3117	4822 051 30102	1k 5% 0,062W	
3118	4822 051 30472	4k7 5% 0,062W	
3119	4822 051 30102	1k 5% 0,062W	
3122	4822 051 30272	2k7 5% 0,062W	
3125	4822 051 30102	1k 5% 0,062W	
3130	4822 051 30684	680k 5% 0,062W	
3131	4822 117 11817	1k2 5% 0,062W	see circuit
3131	4822 051 30392	3k9 5% 0,062W	see circuit
3131	4822 051 30273	27k 5% 0,062W	see circuit
3132	4822 051 30684	680k 5% 0,062W	
3134	4822 051 30101	100R 5% 0,062W	
3135	4822 051 30102	1k 5% 0,062W	
3136	4822 051 30689	68R 5% 0,063W	
3137	4822 051 30472	4k7 5% 0,062W	
3141	4822 051 30102	1k 5% 0,062W	
3142	4822 051 30102	1k 5% 0,062W	
3143	4822 051 30102	1k 5% 0,062W	
3144	4822 051 30102	1k 5% 0,062W	
3145	4822 051 30102	1k 5% 0,062W	
3158	4822 051 30103	10k 5% 0,062W	
3159	4822 051 30103	10k 5% 0,062W	
3160	4822 051 30103	10k 5% 0,062W	
3161	4822 051 30102	1k 5% 0,062W	
3162	4822 051 30102	1k 5% 0,062W	
3163	4822 051 30102	1k 5% 0,062W	
3164	4822 051 30223	22k 5% 0,062W	
3165	4822 117 13632	100k 1% 0,62W	
3170	4822 051 30103	10k 5% 0,062W	
3171	4822 051 30103	10k 5% 0,062W	
3172	4822 051 30103	10k 5% 0,062W	
3173	4822 051 30103	10k 5% 0,062W	
3175	4822 051 30103	10k 5% 0,062W	
3176	4822 051 30103	10k 5% 0,062W	
3177	4822 051 30103	10k 5% 0,062W	
3303	4822 051 30151	150R 5% 0,062W	
3304	4822 051 30221	220R 5% 0,062W	
3305	4822 051 30271	270R 5% 0,062W	
3306	4822 051 30391	390R 5% 0,062W	
3307	4822 051 30561	560R 5% 0,062W	
3308	4822 117 12968	820R 5% 0,62W	
3309	4822 117 11817	1k2 1% 1/16W	
3310	4822 117 12903	1K8 1% 0,063W	
3311	4822 051 30272	2k7 5% 0,062W	
3312	4822 051 30472	4k7 5% 0,062W	
3330	4822 051 30272	2k7 5% 0,062W	
3331	4822 051 30272	2k7 5% 0,062W	
3332	4822 051 30103	10k 5% 0,062W	
3333	4822 051 30103	10k 5% 0,062W	
3334	4822 051 30103	10k 5% 0,062W	
3335	4822 051 30103	10k 5% 0,062W	
3336	4822 051 30103	10k 5% 0,062W	
3337	4822 051 30121	120R 5% 0,062W	
3339	4822 051 30121	120R 5% 0,062W	
3341	4822 051 30121	120R 5% 0,062W	
3343	4822 051 30121	120R 5% 0,062W	
3345	4822 051 30121	120R 5% 0,062W	
3347	4822 051 30121	120R 5% 0,062W	
3350	4822 051 30121	120R 5% 0,062W	
3352	4822 051 30121	120R 5% 0,062W	
3400	4822 051 30151	150R 5% 0,062W	
3401	4822 051 30221	220R 5% 0,062W	
3402	4822 051 30271	270R 5% 0,062W	
3403	4822 051 30391	390R 5% 0,062W	
3501	4822 051 30471	470R 5% 0,062W	
3502	4822 051 30121	120R 5% 0,062W	
3503	4822 051 30101	100R 5% 0,062W	
3504	4822 051 30103	10k 5% 0,062W	
3505	4822 051 30471	470R 5% 0,062W	
3506	4822 051 30471	470R 5% 0,062W	
3605	4822 051 30471	470R 5% 0,062W	kara
3606	4822 051 30272	2k7 5% 0,062W	kara
3607	4822 051 30681	680R 5% 0,062W	kara
3608	4822 051 30105	1M 5% 0,062W	kara
3609	4822 051 30105	1M 5% 0,062W	kara
3610	4822 051 30103	10k 5% 0,062W	kara
3611	4822 117 13632	100k 1% 0,62W	kara
3612	2120 366 90291	Potm Rotary 20K	kara
3613	4822 051 30103	10k 5% 0,062W	kara
3614	4822 051 30339	33R 5% 0,062W	kara
3615	4822 051 30331	330R 5% 0,062W	kara
4100	4822 051 30008	0R Jumper 0603	
4101	4822 051 30008	0R Jumper 0603	
4102	4822 051 30008	0R Jumper 0603	
4103	4822 051 30008	0R Jumper 0603	
4104	4822 051 30008	0R Jumper 0603	
4105	4822 051 30008	0R Jumper 0603	
4106	4822 051 30008	0R Jumper 0603	
4107	4822 051 30008	0R Jumper 0603	
4108	4822 051 30008	0R Jumper 0603	
4109	4822 051 30008	0R Jumper 0603	
4111	4822 051 30008	0R Jumper 0603	
4112	4822 051 30008	0R Jumper 0603	
4113	4822 051 30008	0R Jumper 0603	
4114	4822 051 30008	0R Jumper 0603	
4115	4822 051 30008	0R Jumper 0603	
4116	4822 051 30008	0R Jumper 0603	
4117	4822 051 30008	0R Jumper 0603	
4119	4822 051 30008	0R Jumper 0603	
4120	4822 051 30008	0R Jumper 0603	
4121	4822 051 30008	0R Jumper 0603	
4122	4822 051 30008	0R Jumper 0603	
4128	4822 051 30008	0R Jumper 0603	
4130	4822 051 30008	0R Jumper 0603	
4132	4822 051 30008	0R Jumper 0603	

ELECTRICAL PARTS LIST - FRONT BOARDS

RESISTORS

4137	4822 051 30008	0R Jumper 0603
4138	4822 051 30008	0R Jumper 0603
4139	4822 051 30008	0R Jumper 0603
4140	4822 051 30008	0R Jumper 0603
4141	4822 051 30008	0R Jumper 0603
4142	4822 051 30008	0R Jumper 0603
4143	4822 051 30008	0R Jumper 0603
4144	4822 051 30008	0R Jumper 0603
4145	4822 051 30008	0R Jumper 0603
4146	4822 051 30008	0R Jumper 0603
4147	4822 051 30008	0R Jumper 0603
4148	4822 051 30008	0R Jumper 0603
4149	4822 051 30008	0R Jumper 0603
4150	4822 051 30008	0R Jumper 0603
4152	4822 051 30008	0R Jumper 0603
4153	4822 051 30008	0R Jumper 0603
4154	4822 051 30008	0R Jumper 0603
4155	4822 051 30008	0R Jumper 0603
4156	4822 051 30008	0R Jumper 0603
4157	4822 051 30008	0R Jumper 0603
4158	4822 051 30008	0R Jumper 0603
4159	4822 051 30008	0R Jumper 0603
4160	4822 051 30008	0R Jumper 0603
4161	4822 051 30008	0R Jumper 0603
4163	4822 051 30008	0R Jumper 0603
4164	4822 051 30008	0R Jumper 0603
4165	4822 051 30008	0R Jumper 0603
4166	4822 051 30008	0R Jumper 0603
4168	4822 051 30008	0R Jumper 0603
4169	4822 051 30008	0R Jumper 0603
4170	4822 051 30008	0R Jumper 0603
4171	4822 051 30008	0R Jumper 0603
4172	4822 051 30008	0R Jumper 0603
4173	4822 051 30008	0R Jumper 0603
4174	4822 051 30008	0R Jumper 0603
4175	4822 051 30008	0R Jumper 0603
4176	4822 051 30008	0R Jumper 0603
4177	4822 051 30008	0R Jumper 0603
4178	4822 051 30008	0R Jumper 0603
4179	4822 051 30008	0R Jumper 0603
4180	4822 051 30008	0R Jumper 0603
4181	4822 051 30008	0R Jumper 0603
4182	4822 051 30008	0R Jumper 0603
4183	4822 051 30008	0R Jumper 0603
4184	4822 051 30008	0R Jumper 0603
4185	4822 051 30008	0R Jumper 0603
4186	4822 051 30008	0R Jumper 0603
4187	4822 051 30008	0R Jumper 0603
4188	4822 051 30008	0R Jumper 0603
4189	4822 051 30008	0R Jumper 0603
4190	4822 051 30008	0R Jumper 0603
4191	4822 051 30008	0R Jumper 0603

4192	4822 051 30008	0R Jumper 0603
4193	4822 051 30008	0R Jumper 0603
4194	4822 051 30008	0R Jumper 0603
4195	4822 051 30008	0R Jumper 0603
4196	4822 051 30008	0R Jumper 0603
4197	4822 051 30008	0R Jumper 0603
4198	4822 051 30008	0R Jumper 0603
4199	4822 051 30008	0R Jumper 0603
4200	4822 051 30008	0R Jumper 0603
4201	4822 051 30008	0R Jumper 0603
4202	4822 051 30008	0R Jumper 0603
4203	4822 051 30008	0R Jumper 0603
4204	4822 051 30008	0R Jumper 0603
4205	4822 051 30008	0R Jumper 0603
4206	4822 051 30008	0R Jumper 0603
4207	4822 051 30008	0R Jumper 0603
4208	4822 051 30008	0R Jumper 0603
4209	4822 051 30008	0R Jumper 0603
4210	4822 051 30008	0R Jumper 0603
4211	4822 051 30008	0R Jumper 0603
4212	4822 051 30008	0R Jumper 0603
4213	4822 051 30008	0R Jumper 0603
4214	4822 051 30008	0R Jumper 0603
4215	4822 051 30008	0R Jumper 0603
4216	4822 051 30008	0R Jumper 0603
4217	4822 051 30008	0R Jumper 0603
4218	4822 051 30008	0R Jumper 0603
4219	4822 051 30008	0R Jumper 0603
4220	4822 051 30008	0R Jumper 0603
4221	4822 051 30008	0R Jumper 0603
4222	4822 051 30008	0R Jumper 0603
4223	4822 051 30008	0R Jumper 0603
4224	4822 051 30008	0R Jumper 0603
4225	4822 051 30008	0R Jumper 0603
4226	4822 051 30008	0R Jumper 0603
4227	4822 051 30008	0R Jumper 0603
4228	4822 051 30008	0R Jumper 0603
4229	4822 051 30008	0R Jumper 0603
4230	4822 051 30008	0R Jumper 0603
4231	4822 051 30008	0R Jumper 0603
4232	4822 051 30008	0R Jumper 0603
4234	4822 051 30008	0R Jumper 0603
4235	4822 051 30008	0R Jumper 0603
4236	4822 051 30008	0R Jumper 0603
4237	4822 051 30008	0R Jumper 0603
4238	4822 051 30008	0R Jumper 0603
4239	4822 051 30008	0R Jumper 0603
4240	4822 051 30008	0R Jumper 0603
4241	4822 051 30008	0R Jumper 0603
4242	4822 051 30008	0R Jumper 0603
4243	4822 051 30008	0R Jumper 0603
4244	4822 051 30008	0R Jumper 0603

ELECTRICAL PARTS LIST - FRONT BOARDS

4245	4822 051 30008	0R Jumper 0603
4246	4822 051 30008	0R Jumper 0603
4247	4822 051 30008	0R Jumper 0603
4249	4822 051 30008	0R Jumper 0603
4250	4822 051 30008	0R Jumper 0603
4251	4822 051 30008	0R Jumper 0603
4254	4822 051 30008	0R Jumper 0603
4255	4822 051 30008	0R Jumper 0603
4256	4822 051 30008	0R Jumper 0603
4257	4822 051 30008	0R Jumper 0603
4301	4822 051 30008	0R Jumper 0603
4302	4822 051 30008	0R Jumper 0603
4303	4822 051 30008	0R Jumper 0603
4304	4822 051 30008	0R Jumper 0603
4305	4822 051 30008	0R Jumper 0603
4306	4822 051 30008	0R Jumper 0603
4307	4822 051 30008	0R Jumper 0603
4308	4822 051 30008	0R Jumper 0603
4309	4822 051 30008	0R Jumper 0603
4310	4822 051 30008	0R Jumper 0603
4311	4822 051 30008	0R Jumper 0603
4312	4822 051 30008	0R Jumper 0603
4313	4822 051 30008	0R Jumper 0603
4314	4822 051 30008	0R Jumper 0603
4315	4822 051 30008	0R Jumper 0603
4316	4822 051 30008	0R Jumper 0603
4317	4822 051 30008	0R Jumper 0603
4318	4822 051 30008	0R Jumper 0603
4319	4822 051 30008	0R Jumper 0603
4320	4822 051 30008	0R Jumper 0603
4321	4822 051 30008	0R Jumper 0603
4322	4822 051 30008	0R Jumper 0603
4323	4822 051 30008	0R Jumper 0603
4324	4822 051 30008	0R Jumper 0603
4325	4822 051 30008	0R Jumper 0603
4326	4822 051 30008	0R Jumper 0603
4327	4822 051 30008	0R Jumper 0603
4328	4822 051 30008	0R Jumper 0603
4329	4822 051 30008	0R Jumper 0603
4330	4822 051 30008	0R Jumper 0603
4332	4822 051 30008	0R Jumper 0603
4334	4822 051 30008	0R Jumper 0603
4337	4822 051 30008	0R Jumper 0603
4338	4822 051 30008	0R Jumper 0603
4339	4822 051 30008	0R Jumper 0603
4342	4822 051 30008	0R Jumper 0603
4343	4822 051 30008	0R Jumper 0603
4400	4822 051 30008	0R Jumper 0603
4500	4822 051 30008	0R Jumper 0603
4501	4822 051 30008	0R Jumper 0603
4600	4822 051 30008	0R Jumper 0603
4601	4822 051 30008	0R Jumper 0603

4602	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5100	3198 018 52280	Fixed Inductor 2,2uH 10%	
5101	3139 110 53431	VU Meter FG-PH16CATS00 Black	
5102	5322 242 73686	Ceram Resonator 12MHz	
5103	4822 242 70938	X'tal 32,768kHz	
5104	3198 018 52280	Fixed Inductor 2,2uH 10%	
5105	4822 242 11033	X'tal Resonator 4,332MHz	RDS
5600	2422 549 44607	Fixed Ind 100MHz 600R	
5603	4822 157 10586	Coil 2,2uH 10%	kara
5604	2422 549 44607	Fixed Ind 100MHz 600R	
5605	2422 549 44607	Fixed Ind 100MHz 600R	
5606	2422 549 44607	Fixed Ind 100MHz 600R	

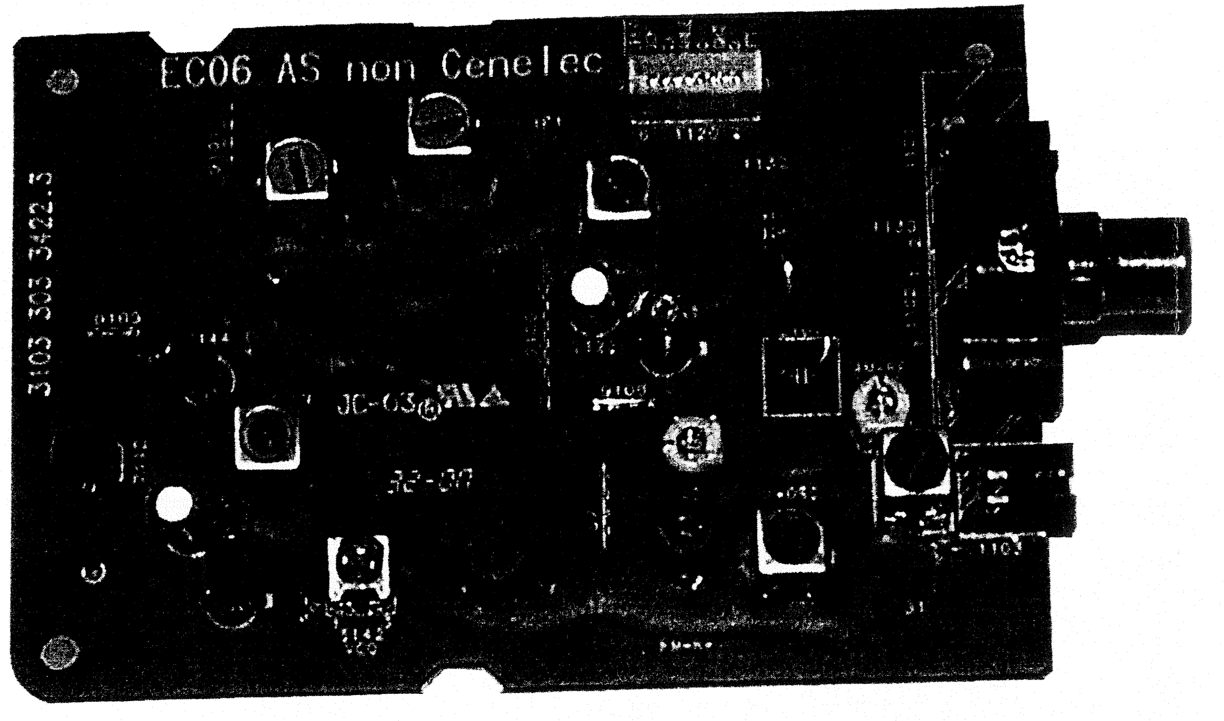
DIODES

6104	9322 190 55676	LTL-816TDK3
6105	4822 130 80622	BAT54
6106	4822 130 31878	1N4003G
6108	4822 130 11397	BAS316
6113	4822 130 31878	1N4003G
6118	4822 130 80622	BAT54
6119	4822 130 31878	1N4003G
6300	9322 190 55676	LTL-816TDK3
6302	9322 190 55676	LTL-816TDK3
6305	9322 190 55676	LTL-816TDK3
6307	9322 190 55676	LTL-816TDK3
6500	9322 179 76676	LTL-816EELC
6501	9322 183 96676	LTL-816GE

TRANSISTORS & INTEGRATED CIRCUITS

7100	3139 110 53501	TMP88CU74F mark "5500S53501"	
7101	5322 130 60159	BC847B	
7102	9352 686 05118	SAA6581T	RDS
7103	9322 145 26668	M24C02-WMN6	
7104	5322 130 60159	BC847B	
7105	5322 130 60159	BC847B	
7106	5322 130 60159	BC847B	
7107	5322 130 60159	BC847B	
7300	4822 209 15449	74HC4094D	
7301	5322 130 60159	BC847B	
7303	5322 130 60159	BC847B	
7306	5322 130 60159	BC847B	
7308	5322 130 60159	BC847B	
7500	5322 130 60159	BC847B	
7501	9322 185 95667	IR RECEIVER TSOP4836	
7504	5322 130 60159	BC847B	
7600	5322 130 60159	BC847B	kara
7601	5322 130 60159	BC847B	kara

Note: Only the parts mentioned in this list are normal service spare parts.


EC06 AS non Cenelec
3103 303 3422.3

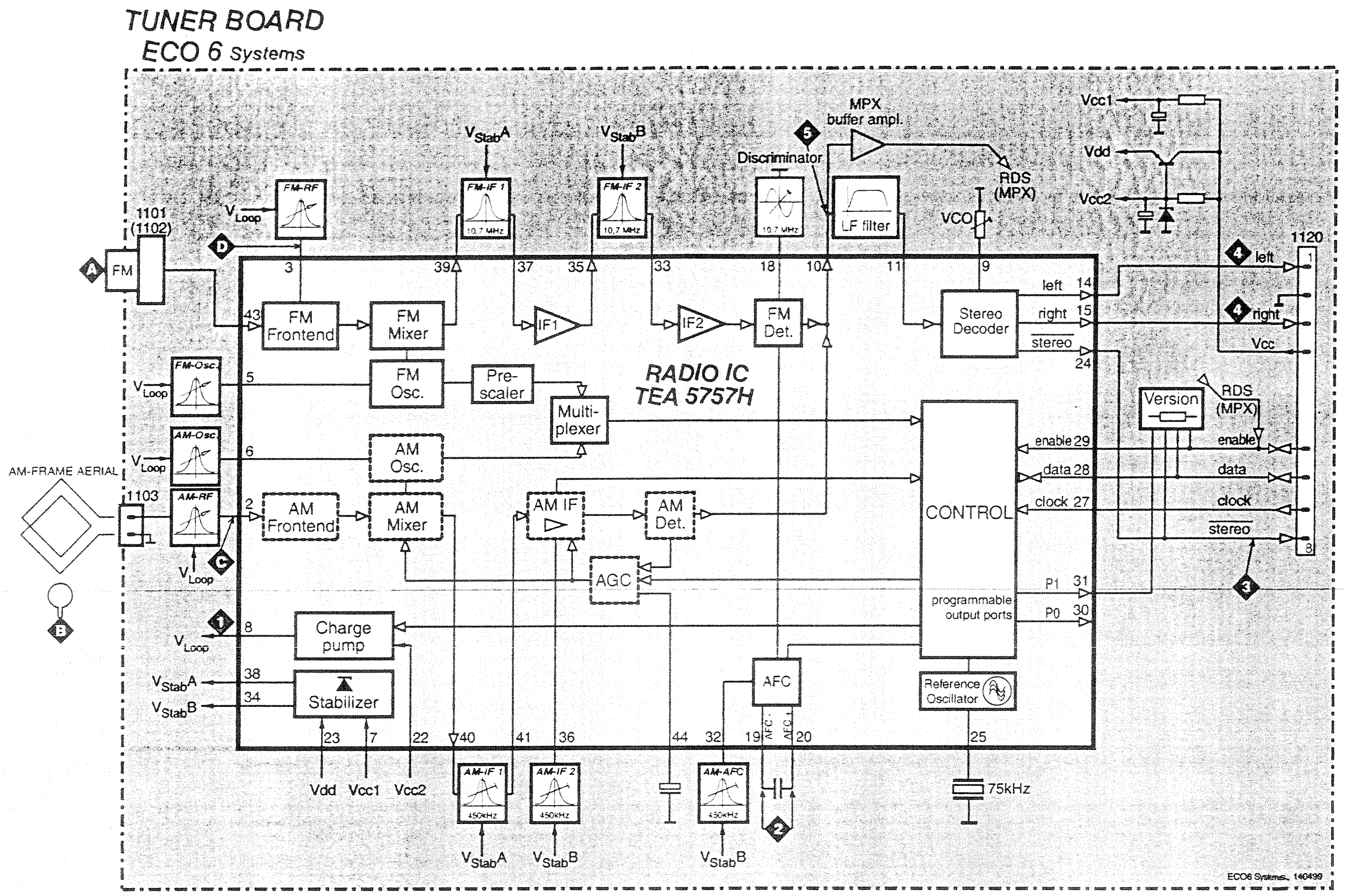
ECO6 Tuner Board

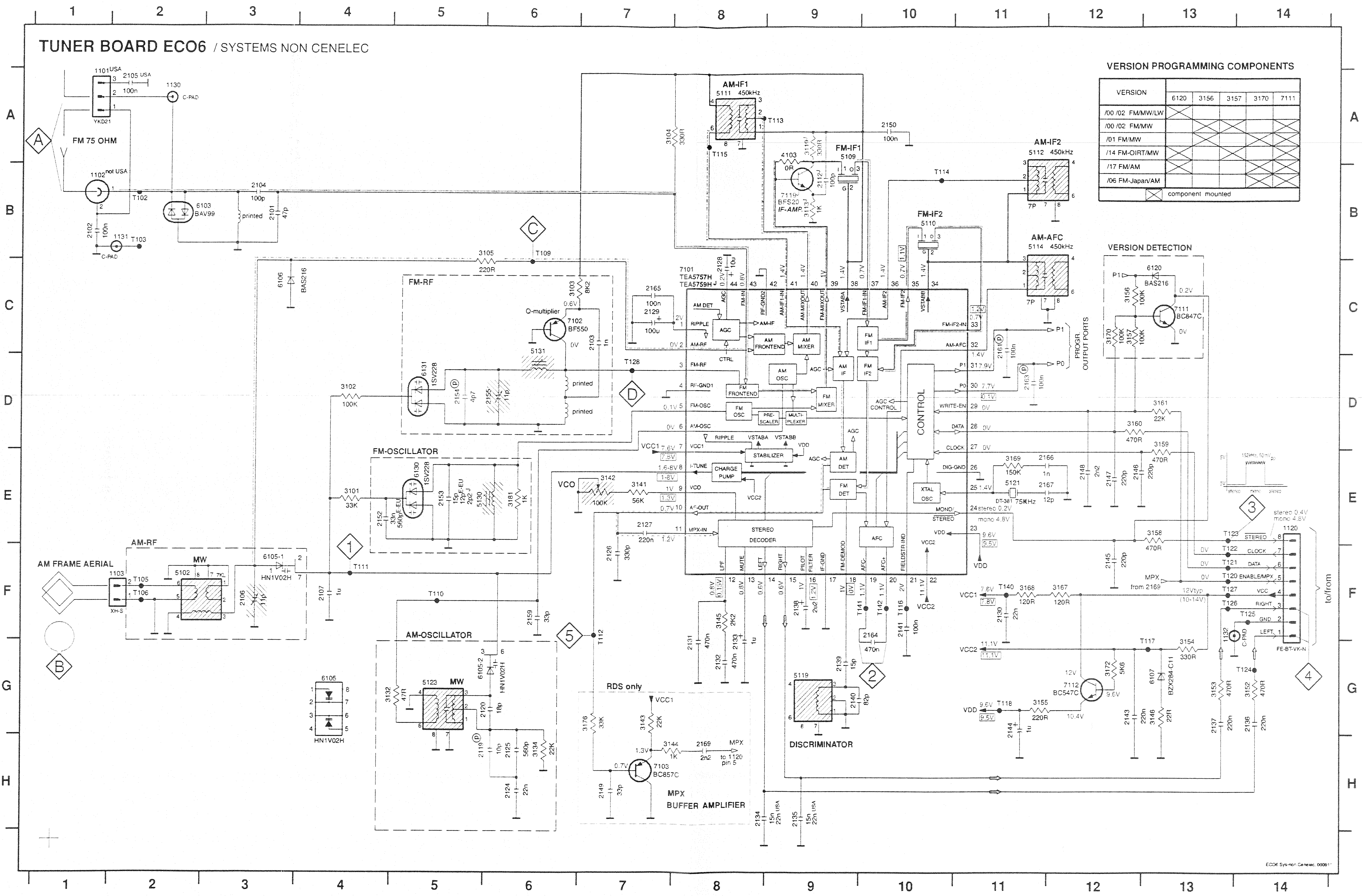
version: ***SYSTEMS non-CENELEC***

TABLE OF CONTENTS

Blockdiagram 7A-1
Schematic Diagram..7A-2
Component Layout...7A-3
Adjustment table 7A-3
Electrical Partslist..7A-4

BLOCK DIAGRAM


TUNER BOARD
ECO 6 Systems
RADIO IC
TEA 5757H
A
FM
1101
(1102)
D
VLoop
FM-RF
VStabA
FM-IF 1
10,7 MHz
VStabB
FM-IF 2
10,7 MHz
5
Discriminator
10,7 MHz
MPX
buffer ampl.
LF filter
RDS
(MPX)
VCO
Vcc1
Vdd
Vcc2
1120
3
39
37
35
33
18
10
11
9
43
FM
Frontend
FM
Mixer
IF1
IF2
FM
Det.
Stereo
Decoder
left
right
stereo
14
15
24
4
left
4
right
Vcc
FM-Osc.
5
FM
Osc.
Pre-
scaler
Multi-
plexer
AM-Osc.
6
AM
Osc.
Version
RDS
(MPX)
enable 29
data 28
clock 27
enable
data
clock
stereo
AM-FRAME AERIAL
1103
AM-RF
2
AM
Frontend
AM
Mixer
AM IF
AM
Det.
AGC
CONTROL
C
B
1
8
Charge
pump
P1 31
P0 30
programmable
output ports
3
38
34
VStabA
VStabB
Stabilizer
AFC
AFC -
AFC +
Reference
Oscillator
23
7
22
40
41
36
44
32
19
20
25
1
8
Vdd
Vcc1
Vcc2
AM-IF 1
450kHz
AM-IF 2
450kHz
AM-AFC
450kHz
2
75kHz
ECO6 Systems_ 140499


TUNER BOARD ECO6 / SYSTEMS NON CENELEC
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H
FM 75 OHM
AM FRAME AERIAL
AM-RF
MW
FM-RF
FM-OSCILLATOR
AM-OSCILLATOR
AM-IF1 5111 450kHz
FM-IF1 5109
FM-IF2 5110
AM-IF2 5112 450kHz
AM-AFC 5114 450kHz
7101 TEA5757H TEA5759H J
CONTROL
STEREO DECODER
DISCRIMINATOR
RDS only
MPX BUFFER AMPLIFIER
VERSION DETECTION
PROGR OUTPUT PORTS
7102 BF550
7103 BC857C
7111 BC847C
7112 BC547C
7119 BFS20 IF-AMP.
6103 BAV99
6105 HN1V02H
6120 BAS216
6106 BAS216
6107 BZX284-C11
Q-multiplier
VCO
XTAL OSC
DT-381 75kHz
STEREO CLOCK DATA ENABLE/MPX VCC RIGHT GND LEFT
1120 FE-BT-VX-N
to/from
ECO6 Sys-non Cenelec 000911

VERSION PROGRAMMING COMPONENTS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	☒				
/00 /02 FM/MW		☒	☒		☒
/01 FM/MW		☒		☒	☒
/14 FM-OIRT/MW	☒		☒		☒
/17 FM/AM	☒			☒	☒
/06 FM-Japan/AM				☒	☒

☒ component mounted

LEGEND

Ⓟ...for provision only
USA ... for USA version only
E-EU ... for East European version only
J ... for Japanese version only

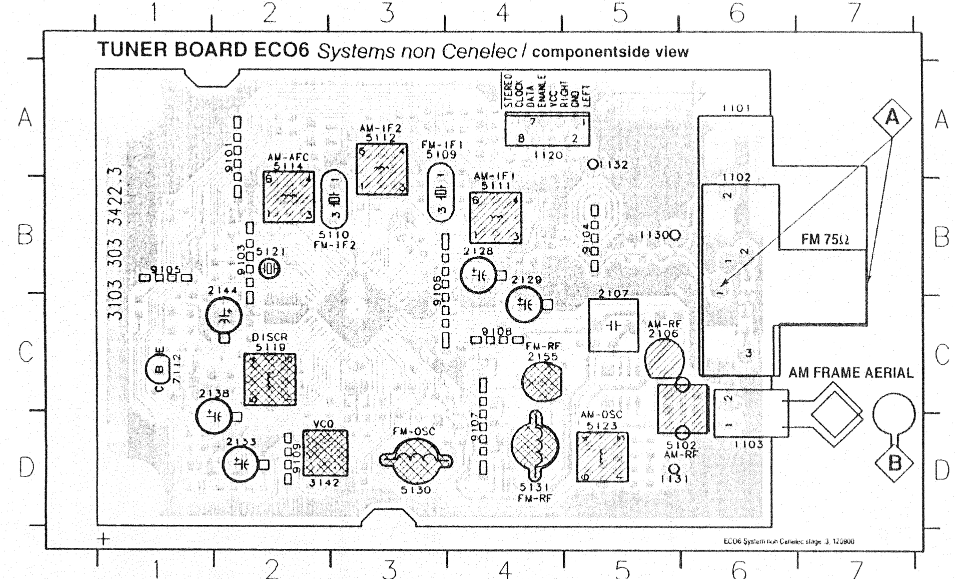
V EVM
...V FM mode stereo
V MW mode
V LW mode
voltages measured while set is tuned to a strong transmitter

Signal path
— FM
-·- AM
- - - MPX (Audio Frequency)
⇨ AF - left/right

1101	A1
1102	B1
1103	F2
1120	E14
1130	A2
1131	B2
1132	G13
2101	B3
2102	B1
2103	C7
2104	B3
2105	A2
2106	F3
2107	F4
2119	H6
2120	G6
2124	H6
2125	H6
2126	F7
2127	E7
2128	C8
2129	C7
2130	F11
2131	G8
2132	G8
2133	G8
2134	H8
2135	H9
2136	G14
2137	G13
2138	F9
2139	G9
2140	G9
2141	F10
2143	G12
2144	G11
2145	F12
2146	E12
2147	E12
2148	E12
2149	H7
2150	A10
2152	E4
2153	E5
2154	D5
2155	D5
2159	F6
2161	C11
2163	D11
2164	F10
2165	C7
2166	E11
2167	E11
2169	H8
3101	E4
3102	D4
3103	C6
3104	A7
3105	B6
3132	G5
3134	H6
3141	E7
3142	E7
3143	G7
3144	H7
3145	F8
3146	G13
3152	G14
3153	G13
3154	G13
3155	G11
3156	C12
3157	C12
3158	E13
3159	D13
3160	D12
3161	D13
3167	F12
3168	F11
3169	E11
3170	C12
3172	G12
3176	G7
3181	E6
5102	F2
5109	B9
5110	B10
5111	A8
5112	A11
5114	B11
5119	G9
5121	E11
5123	G5
5130	E6
5131	D6
6103	B2
6105-1	F3
6105-2	G5
6106	C3
6107	G13
6120	C13
6130	E5
6131	D5
7101	C8
7102	C6
7103	H7
7111	C13
7112	G12
T102	B2
T103	B2
T105	F2
T106	F2
T109	B6
T110	F5
T111	F4
T112	F7
T113	A8
T114	B10
T115	A8
T116	F10
T117	G13
T118	G11
T120	F13
T121	F13
T122	F13
T123	E13
T124	G14
T125	F14
T126	F13
T127	F13
T128	D7
T140	F11
T141	F10
T142	F10

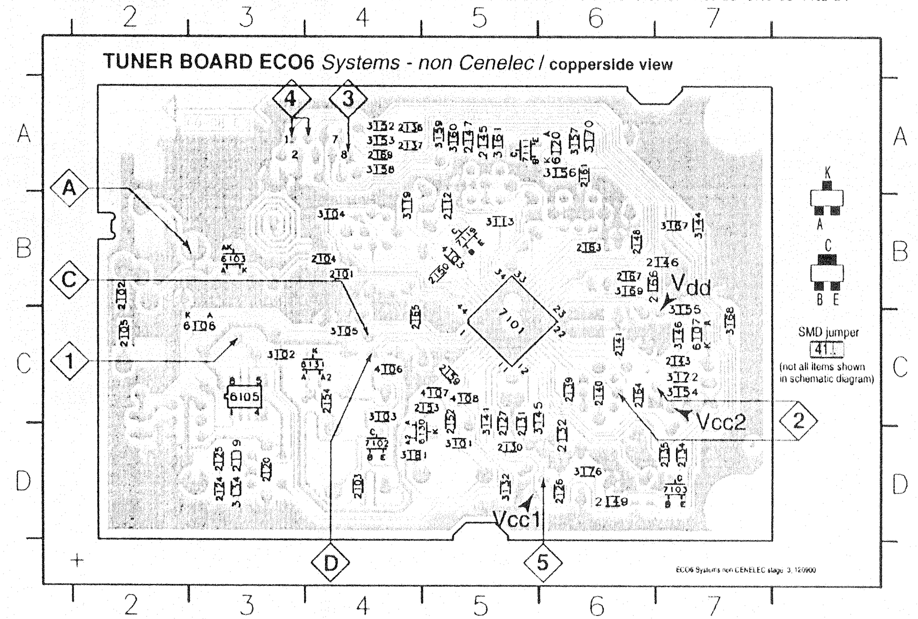
1101 A6	1120 A4	1132 A5	2128 C4	2138 C2	3142 D2	5110 B3	5114 A2	5123 D5	7112 C1	9104 B5	9107 D4	
1102 B6	1130 B5	2106 C5	2129 B4	2144 B2	5102 D6	5111 B4	5119 C2	5130 D3	9101 A2	9105 B1	9108 C4	
1103 D6	1131 D5	2107 B5	2133 D2	2155 C4	5109 A3	5112 A3	5121 B2	5131 D4	9103 B2	9106 B3	9109 D2	

TUNER BOARD ECO6 *Systems non Cenelec* / componentside view



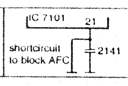
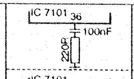
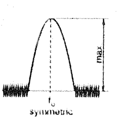
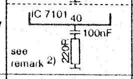
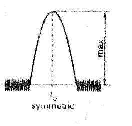
2101 B4	2119 D3	2130 D5	2137 A4	2146 B7	2153 C5	2165 C4	3103 C4	3134 D3	3152 A4	3158 A4	3169 B6	4106 C4	6107 C7	7103 D7
2102 B1	2120 D3	2131 C5	2139 C6	2147 A5	2154 C4	2166 B6	3104 B4	3141 C5	3153 A4	3159 A5	3170 A6	4107 C5	6120 A6	7111 A5
2103 D4	2124 D3	2132 D6	2140 C6	2148 B6	2159 C5	2167 B6	3105 C4	3143 D6	3154 C7	3160 A5	3172 C7	4108 C5	6130 D4	7119 B5
2104 B4	2125 D3	2134 D7	2141 C6	2149 D6	2161 A6	2169 A4	3113 B5	3144 B7	3155 C7	3161 A5	3176 D6	6103 B3	6131 C4	
2105 C1	2126 D6	2135 D7	2143 C7	2150 B5	2163 B6	3101 D5	3119 B5	3145 C5	3156 A6	3167 B7	3181 D4	6105 C3	7101 C5	
2112 B5	2127 C5	2136 A4	2145 A5	2152 C5	2164 C6	3102 C3	3132 D5	3146 C7	3157 A6	3168 C7	4103 B5	6106 C3	7102 D4	

TUNER BOARD ECO6 *Systems - non Cenelec* / copperside view


2
3
4
5
6
7
A
B
C
D
4
3
A
C
1
2
D
5
Vdd
Vcc2
Vcc1
7101
K
A
C
B E
SMD jumper
411
(not all items shown in schematic diagram)
ECO6 System non CENELEC stage 3, 120900

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	◇1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	◇D	 IC 7101 21 shortcircuit to block AFC 2141	5119	◇2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	◇A	108MHz	2155	◇4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	◇C Δf=±10kHz V_{RF} = 0.5mV (as low as possible)	 IC 7101 36 100nF 220R	5111	◇5	 max f_0 symmetric
			 IC 7101 40 100nF 220R see remark [2]	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 2mV		5114	◇2	0 ± 2 mV DC
AM RF[3]						
MW[4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇5	 max f_0 symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

[1] If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

[2] RC network serves for damping the IF-filter while adjusting the other one.

[3] For AM RF adjustments the original frame antenna has to be used !

[4] MW has to be aligned before LW.

↕ Repeat

Electrical Partslist *ECO6* SYSTEMS NON-CENELEC

MISCELLANEOUS

1101	2422 015 19376	SOCKET 2P CLICKFIT	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR 2 POLE	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2101 ©	4822 126 13692	47pF	1%	63V	
2102 ©	4822 126 13838	100nF	10%	50V	not USA
2103 ©	5322 122 31647	1nF	10%	63V	
2104 ©	5322 122 32531	100pF	5%	50V	
2105 ©	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00191	3-11pF TRIMCAP.,N450			
2107	4822 121 51319	1µF	20%	50V	
2120 ©	4822 126 13689	18pF	1%	63V	
2124 ©	5322 122 32654	22nF	10%	63V	
2125 ©	2020 552 96199	560pF	1%	50V	
2126 ©	5322 122 31863	330pF	5%	50V	
2127 ©	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10µF	20%	63V	
2129	4822 124 41584	100µF	20%	10V	
2130 ©	5322 122 32654	22nF	10%	63V	
2131 ©	4822 126 13482	470nF	20%	16V	
2132 ©	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1µF	20%	63V	
2134 ©	4822 126 13188	15nF	5%	63V	not USA
2134 ©	5322 122 32654	22nF	10%	63V	USA only
2135 ©	4822 126 13188	15nF	5%	63V	not USA
2135 ©	5322 122 32654	22nF	10%	63V	USA only
2136 ©	4822 126 14076	220nF	20%	25V	
2137 ©	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2µF	20%	50V	
2139 ©	4822 126 14236	15pF	5%	50V	
2140 ©	4822 126 13695	82pF	1%	63V	
2141 ©	4822 126 13838	100nF	10%	50V	
2143 ©	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	1µF	20%	63V	
2145 ©	4822 122 33575	220pF	5%	50V	
2146 ©	4822 122 33575	220pF	5%	50V	
2147 ©	4822 122 33575	220pF	5%	50V	
2148 ©	4822 122 33127	2,2nF	10%	63V	
2149 ©	5322 122 32659	33pF	5%	50V	RDS only
2150 ©	4822 126 13838	100nF	10%	50V	
2152 ©	4822 126 12105	33nF	5%	63V	not for East Europe
2152 ©	5322 116 80853	560pF	5%	63V	for East Europe only
2153 ©	4822 126 13486	15pF	2%	63V	not for East Europe
2153 ©	4822 122 33926	12pF	2%	50V	for East Europe only
2155	2020 800 00191	3-11pF TRIMCAP.,N450			
2159 ©	5322 122 32659	33pF	5%	50V	
2164 ©	4822 126 13482	470nF	20%	16V	
2165 ©	4822 126 13838	100nF	10%	50V	
2166 ©	5322 122 31647	1nF	10%	63V	
2167 ©	4822 122 33926	12pF	5%	50V	
2169 ©	4822 122 33127	2,2nF	10%	63V	RDS only

RESISTORS

3101 ©	4822 051 20333	33kΩ	5%	0,1W	
3102 ©	4822 117 10837	100kΩ	1%	0,1W	
3103 ©	4822 051 20822	8,2kΩ	5%	0,1W	
3104 ©	4822 117 13577	330Ω	1%	0,1W	
3105 ©	4822 117 11503	220Ω	5%	0,1W	
3132 ©	4822 051 20479	47Ω	5%	0,1W	
3134 ©	4822 051 20223	22kΩ	5%	0,1W	
3141 ©	4822 117 11148	56kΩ	1%	0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ			
3143 ©	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144 ©	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3146 ©	4822 051 20229	22Ω	5%	0,1W	
3152 ©	4822 051 20471	470Ω	5%	0,1W	
3153 ©	4822 051 20471	470Ω	5%	0,1W	
3154 ©	4822 117 13577	330Ω	1%	0,1W	
3155 ©	4822 117 11503	220Ω	5%	0,1W	
3156 ©	4822 117 10837	100kΩ	1%	0,1W	
3157 ©	4822 117 10837	100kΩ	1%	0,1W	
3158 ©	4822 051 20471	470Ω	5%	0,1W	
3159 ©	4822 051 20471	470Ω	5%	0,1W	
3160 ©	4822 051 20471	470Ω	5%	0,1W	
3161 ©	4822 051 20223	22kΩ	5%	0,1W	
3167 ©	4822 051 20121	120Ω	5%	0,1W	
3168 ©	4822 051 20121	120Ω	5%	0,1W	
3169 ©	4822 051 20154	150kΩ	5%	0,1W	
3170 ©	4822 117 10837	100kΩ	1%	0,1W	
3172 ©	4822 051 20562	5,6kΩ	5%	0,1W	
3176 ©	4822 051 20333	33kΩ	5%	0,1W	RDS only
3181 ©	4822 051 10102	1kΩ	2%	0,25W	
4103 ©	4822 051 20008	CHIP JUMPER 0805			
4106 ©	4822 051 20008	CHIP JUMPER 0805			
4107 ©	4822 051 20008	CHIP JUMPER 0805			
4108 ©	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW
5109	4822 242 70665	FM-IF FILTER 10,7MHz
5110	4822 242 70665	FM-IF FILTER 10,7MHz
5111	2422 549 44023	AM-IF FILTER 450kHz
5112	4822 157 70302	AM-IF FILTER 450kHz
5114	4822 157 70302	AM-IF FILTER 450kHz
5119	4822 157 11443	DISCRIMINATOR COIL
5121	4822 242 10261	QUARTZ 75kHz
5123	2422 549 44108	RF-COIL, AM-OSCILLATOR
5130	4822 157 11843	RF COIL 1,5 TURNS
5131	4822 157 11843	RF COIL 1,5 TURNS

DIODES

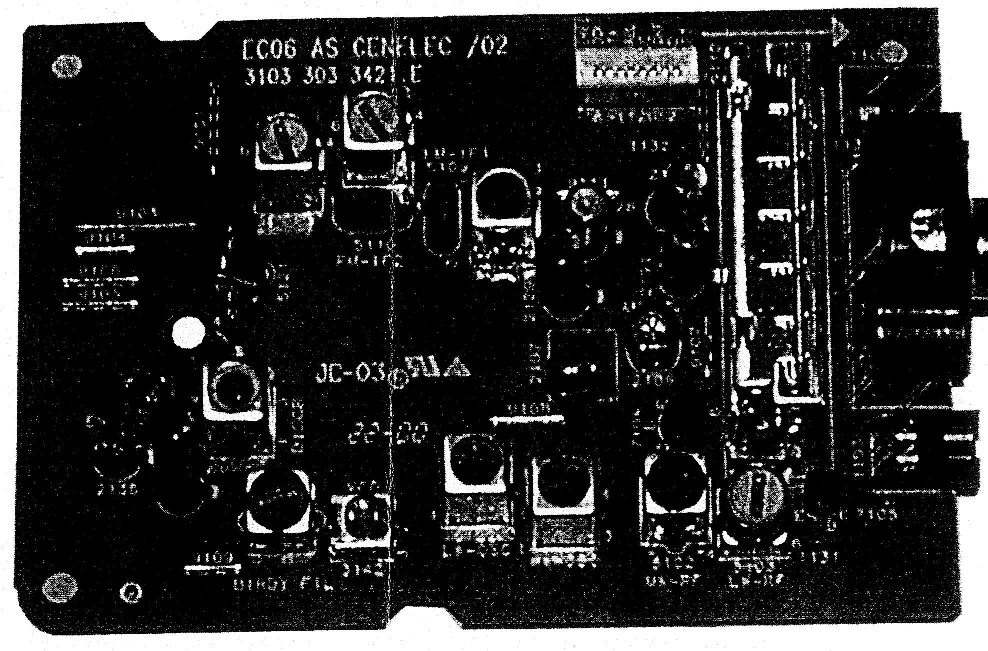
6103 ©	5322 130 34337	BAV99
6105 ©	4822 130 83075	HN1V02H
6106 ©	4822 130 83757	BAS216
6107 ©	9340 386 90115	BZX284-C11
6120 ©	4822 130 83757	BAS216
6130 ©	4822 130 82833	1SV228
6131 ©	4822 130 82833	1SV228

TRANSISTORS

7102	4822 130 42131	BF550	
7103 ©	5322 130 42756	BC857C	RDS only
7111 ©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	

INTEGRATED CIRCUITS

7101 ©	9351 740 80557	TEA5757H/V1, RADIO IC


ECO6 AS CENELEC /02
3103 303 3421.E

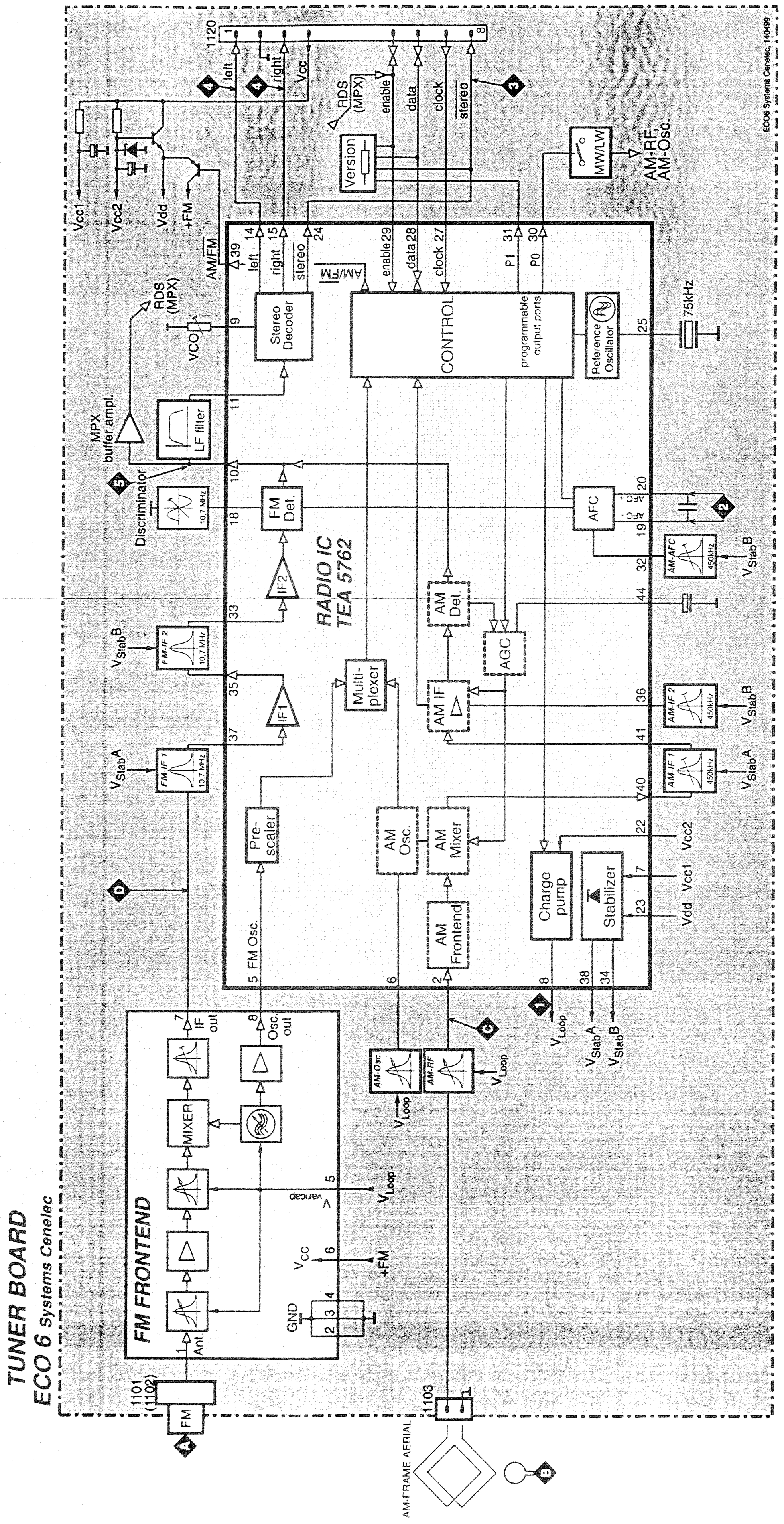
ECO6 Tuner Board

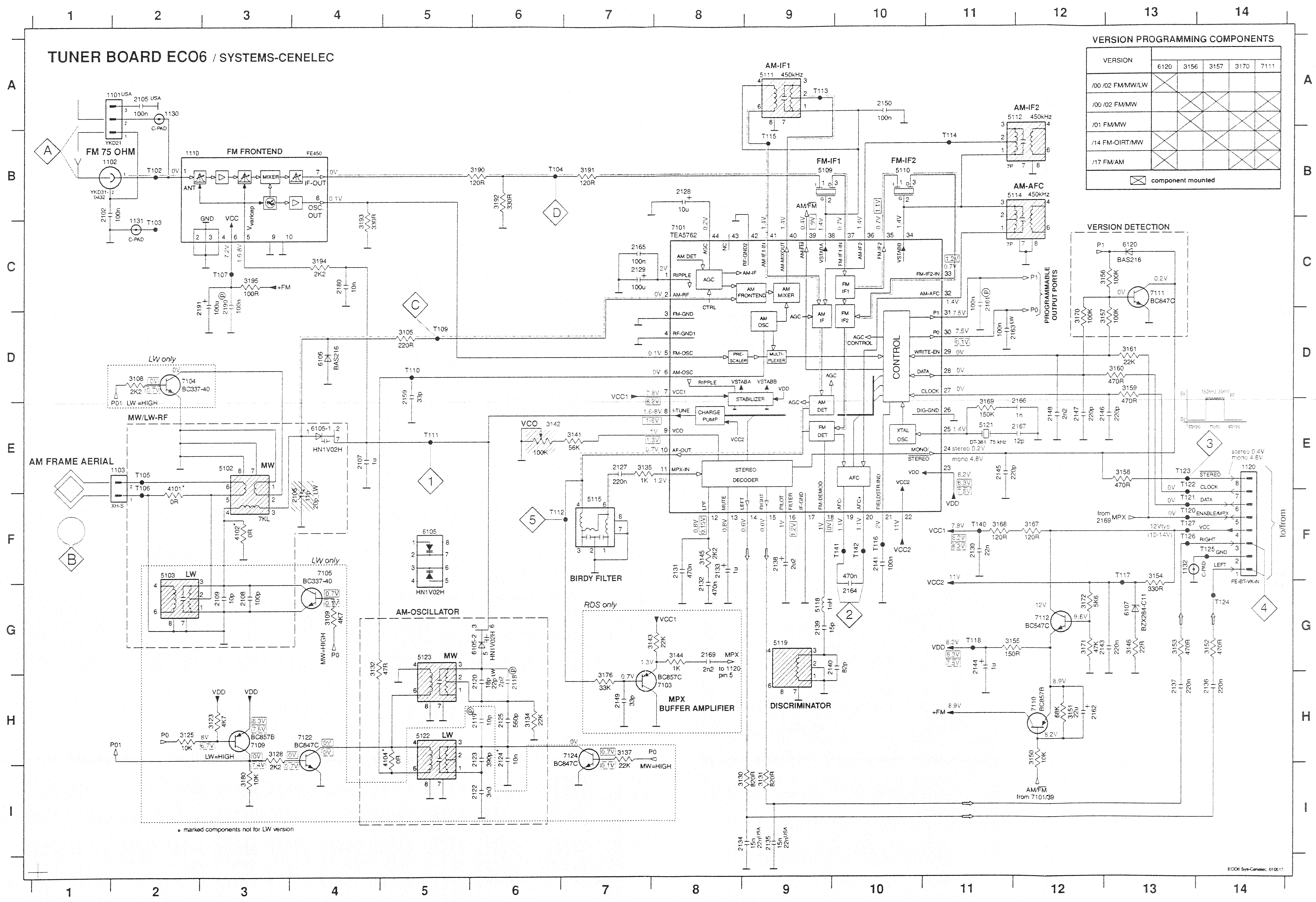
version: ***SYSTEMS CENELEC***

TABLE OF CONTENTS

Blockdiagram 7B-1
Schematic Diagram..7B-2
Component Layout...7B-3
Adjustment table 7B-3
Electrical Partslist...7B-4

BLOCK DIAGRAM


TUNER BOARD
ECO 6 Systems Cenelec
FM FRONTEND
Ant.
MIXER
IF out
Osc. out
GND
Vcc
+FM
Varicap
VLoop
1101 (1102)
FM
1103
AM-FRAME AERIAL
AM-Osc.
AM-RF
RADIO IC TEA 5762
5 FM Osc.
Pre-scaler
AM Frontend
AM Osc.
AM Mixer
Charge pump
Stabilizer
Multi-plexer
AM IF
AGC
AM Det.
IF1
IF2
FM Det.
AFC
Discriminator
MPX buffer ampl.
LF filter
VCO
RDS (MPX)
Stereo Decoder
CONTROL
programmable output ports
Reference Oscillator
75kHz
Version
MW/LW
AM-RF
AM-Osc.
FM IF 1
FM IF 2
AM IF 1
AM IF 2
AM AFC
VStabA
VStabB
Vdd
Vcc1
Vcc2
+FM
AM/FM
left
right
stereo
enable
data
clock
P1
P0
1120
ECO6 Systems Cenelec 140499


TUNER BOARD ECO6 / SYSTEMS-CENELEC
FM 75 OHM
FM FRONTEND
FE450
ANT
MIXER
IF-OUT
OSC OUT
GND
VCC
Vvaricap
AM-IF1
5111 450kHz
AM-IF2
5112 450kHz
AM-AFC
5114 450kHz
FM-IF1
5109
FM-IF2
5110
7101
TEA5762
AGC
AM FRONTEND
AM MIXER
AM OSC
FM IF1
FM IF2
AM IF
AM DET
FM DET
PRE-SCALER
MULTI-PLEXER
STABILIZER
CHARGE PUMP
XTAL OSC
CONTROL
STEREO DECODER
AFC
PROGRAMMABLE OUTPUT PORTS
VERSION DETECTION
BAS216
BC847C
LW only
BC337-40
MW/LW-RF
AM FRAME AERIAL
MW
LW
HN1V02H
AM-OSCILLATOR
VCO
BIRDY FILTER
RDS only
MPX BUFFER AMPLIFIER
BC857C
DISCRIMINATOR
LW=HIGH
MW=HIGH
BC857B
BC547C
BZX284-C11
FE-BT-VK-IN
to/from
STEREO
CLOCK
DATA
ENABLE/MPX
VCC
RIGHT
GND
LEFT
AM/FM from 7101/39
* marked components not for LW version
ECO6 Sys-Cenelec 010517

VERSION PROGRAMMING COMPONENTS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	☒				
/00 /02 FM/MW		☒	☒		☒
/01 FM/MW		☒		☒	☒
/14 FM-OIRT/MW	☒		☒		☒
/17 FM/AM	☒			☒	☒

☒ component mounted

1101	A2
1102	B1
1103	E2
1110	B2
1120	E14
1130	A2
1131	C2
1132	F13
2102	B1
2105	A2
2106	E3
2107	E4
2108	G3
2109	G3
2118	H6
2119	H6
2120	H6
2122	I6
2123	H6
2124	H6
2125	H6
2127	E7
2128	B8
2129	C7
2130	F11
2131	F8
2132	F8
2133	F8
2134	I8
2135	I9
2136	H14
2137	H13
2138	F9
2139	G9
2140	G9
2141	F10
2143	G12
2144	G11
2145	E11
2146	E12
2147	E12
2148	E12
2149	H7
2150	A10
2159	D5
2161	C11
2162	H12
2163	D11
2164	G10
2165	C7
2166	E11
2167	E11
2169	G8
2180	C4
2190	C3
2191	C3
3105	D5
3108	D2
3109	G4
3123	H3
3125	H2
3128	H3
3130	I9
3131	I9
3132	G4
3134	H6
3135	E7
3137	H7
3141	E7
3142	E6
3143	G7
3144	G8
3145	F8
3146	G13
3150	H12
3151	H12
3152	G14
3153	G13
3154	F13
3155	G12
3156	C12
3157	D12
3158	E13
3159	D13
3160	D13
3161	D13
3167	F12
3168	F11
3169	E11
3170	D12
3171	G12
3172	G12
3176	H7
3180	I3
3190	B6
3191	B7
3192	B6
3193	B4
3194	C4
3195	C3
4101	E2
4102	F3
4104	H5
5102	E3
5103	F2
5109	B9
5110	B10
5111	A9
5112	A11
5114	B11
5115	E7
5118	G9
5119	G9
5121	E11
5122	H5
5123	G5
6105-1	E4
6105-2	G6
6106	D4
6107	G13
6120	C13
7101	C8
7103	H8
7104	D2
7105	F4
7109	H3
7110	H12
7111	C13
7112	G12
7122	H4
7124	H7
T102	B2
T103	B2
T104	B6
T105	E2
T106	E2
T107	C3
T109	D5
T110	D5
T111	E5
T112	F7
T113	A9
T114	B11
T116	F10
T117	F13
T118	G11
T120	F13
T121	F13
T122	E13
T123	E13
T124	G14
T125	F14
T126	F13
T127	F13
T140	F11
T141	F10
T142	F10

LEGEND

* ... only assembled in FM/AM-version
Ⓟ ...for provision only
USA ... for USA version only
LW ... for LW version only

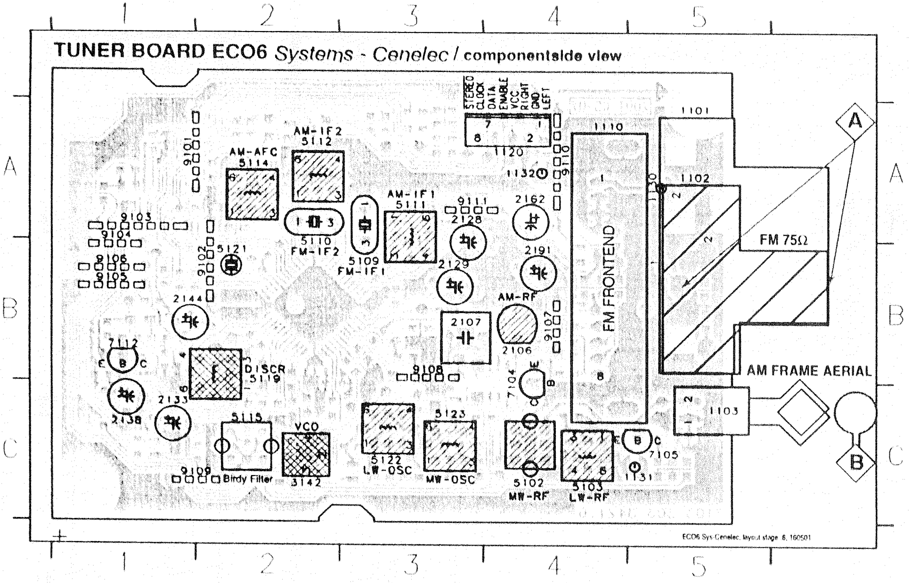
SMD jumper
41xx
0R

Ⓥ EVM

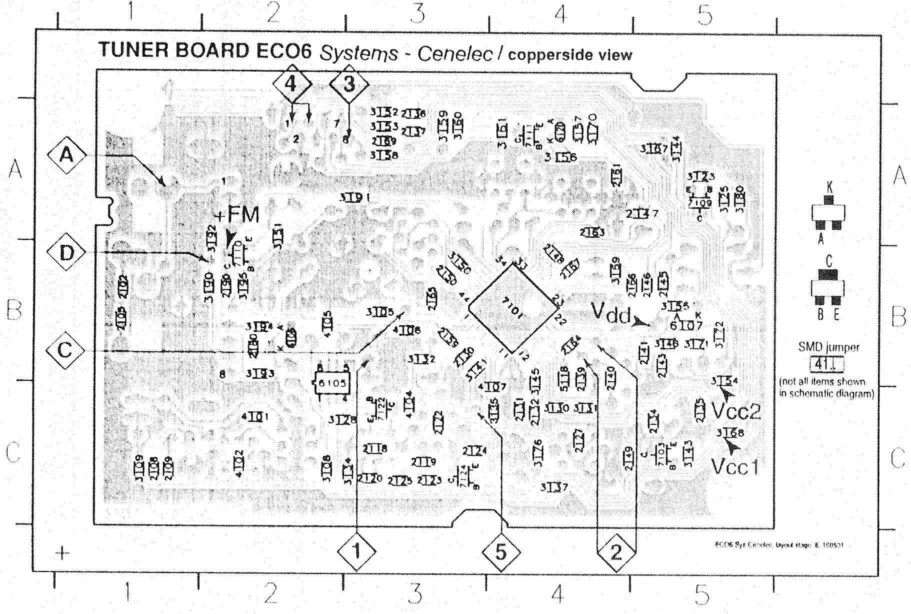
...V FM mode stereo
▭ ...V MW mode
⬚ ...V LW mode
voltages measured while
set is tuned to a strong transmitter

Signal path
— FM
- - AM
MPX (Audio Frequency)
⇨ AF - left/right

1101 B5
1102 B5
1103 C5
1110 B4
1120 A4
1130 A5
1131 C5
1132 A4
2106 B4
2107 B3
2128 A3
2129 B3
2133 C1
2138 B1
2144 B1
2162 A4
2191 B4
3142 C2
5102 C4
5103 C4
5109 B3
5110 A2
5111 A3
5112 A2
5114 A2
5115 C2
5119 B2
5121 B2
5122 C3
5123 C3
7104 C4
7105 C5
7112 B1
9101 A2
9102 B2
9103 A1
9104 B1
9105 B1
9106 B1
9107 B4
9108 B3
9109 C2
9110 A4
9111 A3

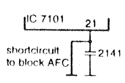
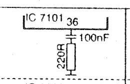
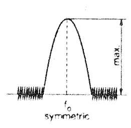
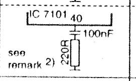
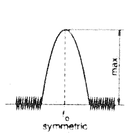


2102 B1
2105 B1
2106 C1
2109 C1
2118 C3
2119 C3
2120 C3
2122 C3
2123 C3
2124 C3
2125 C3
2127 C4
2130 B3
2131 C4
2132 C4
2134 C5
2135 C5
2136 A3
2137 A3
2139 B4
2140 B4
2141 B5
2143 B5
2145 B5
2146 B5
2147 A5
2148 B4
2149 C4
2150 B3
2159 B3
2161 A4
2163 A4
2164 B4
2165 B3
2166 B5
2167 B4
2169 A3
2180 B2
2190 B2
3105 B3
3108 C2
3109 C1
3123 A5
3125 A5
3128 C2
3130 C4
3131 C4
3132 B3
3134 C3
3135 C4
3137 C4
3141 B3
3143 C5
3144 A5
3145 C4
3146 B5
3150 B3
3151 A2
3152 A3
3153 A3
3154 B5
3155 B5
3156 A4
3157 A4
3158 A3
3159 A3
3160 A3
3161 A4
3167 A5
3168 C5
3169 B4
3170 A4
3171 B5
3172 B5
3176 C4
3180 A5
3190 B2
3191 A3
3192 A2
3193 B2
3194 B2
3195 B2
4101 C2
4102 C2
4104 C3
4105 B2
4106 B3
4107 C4
5118 C4
6105 B2
6106 B2
6107 B5
6120 A4
7101 B4
7103 C5
7109 A5
7110 B2
7111 A4
7122 C3
7124 C3


1
2
3
4
5
A
B
C
TUNER BOARD ECO6 Systems - Cenelec / copperside view
4
3
A
D
C
FM
7101
Vdd
Vcc2
Vcc1
6105
K
A
C
B E
SMD jumper
411
(not all items shown in schematic diagram)
1
5
2

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (ECO6 Cenelec FM/MW - and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check	◇1	8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
FM - IF						
FM	10.7MHz, 45mV continuous wave	◇D	 IC 7101 21 shortcircuit to block AFC 2141	5119	◇2	0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz 1)
FM RF (channel separation)	Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.					
FM	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	◇A	98MHz	IF coil inside FM frontend 1110	◇4	right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	◇C Δf = ±10kHz V_{RF} = 0.5mV (as low as possible)	 IC 7101 36 100nF 220R	5111	◇5	 max. f_o symmetric
			 IC 7101 40 100nF 220R see remark 2)	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 2mV		5114	◇2	0mV ±2mV
AM RF 3)						
MW	1494kHz	◇B	1494kHz	2106	◇5	 max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz	Δf = ±30kHz V_{RF} as low as possible	198kHz	5103		

ECO6 Sys Cenelec 190599

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation
(input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used!
MW has to be aligned before LW.

↕ Repeat

Electrical Partslist *ECO6* SYSTEMS-CENELEC

MISCELLANEOUS

1101	2422 015 19376	SOCKET CLICKFIT 2P	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR, 2 POLE	
1110	2422 542 90071	FM FRONTEND	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2102©	4822 126 13838	100nF	10%	50V	not USA
2105©	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00204	TRIMCAP. 4,2 - 20pF, N750			LW only
2106	2020 800 00191	TRIMCAP. 3 - 11pF, N450			FM/AM only
2107	4822 121 51319	1µF	20%	50V	
2108©	5322 122 32531	100pF	5%	50V	LW only
2109©	5322 122 32448	10pF	5%	50V	LW only
2120©	4822 126 13689	18pF	1%	63V	FM/AM only
2120©	5322 122 32658	22pF	5%	50V	LW only
2122©	4822 122 33891	3,3nF	10%	63V	LW only
2123©	2020 552 93494	390pF	1%	50V	LW only
2124©	4822 122 33177	10nF	20%	50V	FM/AM only
2125©	2020 552 96199	560pF	1%	50V	
2127©	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10µF	20%	63V	
2129	4822 124 41584	100µF	20%	10V	
2130©	5322 122 32654	22nF	10%	63V	
2131©	4822 126 13482	470nF	20%	16V	
2132©	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1µF	20%	63V	
2134©	3198 017 31530	15nF	10%	50V	not USA
2134©	5322 122 32654	22nF	10%	63V	USA only
2135©	3198 017 31530	15nF	10%	50V	not USA
2135©	3198 017 32230	22nF	10%	25V	USA only
2136©	4822 126 14076	220nF	20%	25V	
2137©	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2µF	20%	50V	
2139©	4822 126 14236	15pF	5%	50V	
2140©	4822 126 13695	82pF	1%	63V	
2141©	4822 126 13838	100nF	10%	50V	
2143©	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	1µF	20%	63V	
2145©	4822 122 33575	220pF	5%	50V	
2146©	4822 122 33575	220pF	5%	50V	
2147©	4822 122 33575	220pF	5%	50V	
2148©	4822 122 33127	2,2nF	10%	63V	
2149©	5322 122 32659	33pF	5%	50V	RDS only
2150©	4822 126 13838	100nF	10%	50V	
2159©	5322 122 31151	22µF	20%	50V	
2163©	4822 126 13838	100nF	10%	50V	LW only
2164©	4822 126 13482	470nF	20%	16V	
2165©	4822 126 13838	100nF	10%	50V	
2166©	5322 122 31647	1nF	10%	63V	
2167©	4822 122 33926	12pF	5%	50V	
2169©	4822 122 33127	2,2nF	10%	63V	RDS only
2180©	3198 017 31030	10nF	10%	50V	
2190©	4822 126 13838	100nF	10%	50V	
2191	4822 124 40178	100µF	20%	10V	

RESISTORS

3105©	4822 117 11503	220Ω	5%	0,1W	
3108©	4822 117 11449	2,2kΩ	1%	0,1W	LW only
3109©	4822 051 20472	4,7kΩ	5%	0,1W	LW only
3123©	4822 051 20472	4,7kΩ	5%	0,1W	LW only
3125©	4822 117 10833	10kΩ	1%	0,1W	LW only
3128©	4822 117 11449	2,2kΩ	1%	0,1W	LW only
3130©	3198 021 38210	820Ω	5%	0,06W	
3131©	3198 021 38210	820Ω	5%	0,06W	
3132©	4822 051 20479	47Ω	5%	0,1W	
3134©	4822 051 20223	22kΩ	5%	0,1W	
3135©	3198 021 31020	1kΩ	5%	0,06W	
3137©	4822 051 20223	22kΩ	5%	0,1W	LW only
3141©	4822 117 11148	56kΩ	1%	0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ			
3143©	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144©	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145©	4822 117 11449	2,2kΩ	1%	0,1W	
3146©	4822 051 20229	22Ω	5%	0,1W	
3150©	4822 117 10833	10kΩ	1%	0,1W	
3151©	4822 051 20683	68kΩ	5%	0,1W	
3152©	4822 051 20471	470Ω	5%	0,1W	
3153©	4822 051 20471	470Ω	5%	0,1W	
3154©	4822 117 13577	330Ω	1%	0,1W	
3155©	4822 117 10353	150Ω	5%	0,1W	
3156©	4822 117 10837	100kΩ	1%	0,1W	
3157©	4822 117 10837	100kΩ	1%	0,1W	
3158©	4822 051 20471	470Ω	5%	0,1W	
3159©	4822 051 20471	470Ω	5%	0,1W	
3160©	4822 051 20471	470Ω	5%	0,1W	
3161©	4822 051 20223	22kΩ	5%	0,1W	
3167©	4822 051 20121	120Ω	5%	0,1W	
3168©	4822 051 20121	120Ω	5%	0,1W	
3169©	4822 051 20154	150kΩ	5%	0,1W	
3170©	4822 117 10837	100kΩ	1%	0,1W	
3171©	4822 117 10834	47kΩ	1%	0,1W	
3172©	4822 051 20562	5,6kΩ	5%	0,1W	
3176©	4822 051 20333	33kΩ	5%	0,1W	RDS only
3180©	4822 117 10833	10kΩ	1%	0,1W	LW only
3190©	4822 051 20121	120Ω	5%	0,1W	
3191©	4822 051 20121	120Ω	5%	0,1W	
3192©	4822 117 13577	330Ω	1%	0,1W	
3193©	4822 117 13577	330Ω	1%	0,1W	
3194©	4822 117 11449	2,2kΩ	1%	0,1W	
3195©	4822 051 20101	100Ω	5%	0,1W	
4101©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4102©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4104©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4105©	4822 051 20008	CHIP JUMPER 0805			
4106©	4822 051 20008	CHIP JUMPER 0805			
4107©	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW	
5103	2422 549 44107	RF-COIL LW	LW only
5109	4822 157 71639	FM-IF FILTER 10,7MHz	
5110	4822 242 70665	FM-IF FILTER 10,7MHz	
5111	2422 549 44023	AM-IF FILTER 450kHz	
5112	4822 157 70302	AM-IF FILTER 450kHz	
5114	4822 157 70302	AM-IF FILTER 450kHz	
5115	4822 157 71636	ANTI BIRDY FILTER	
5118©	2422 535 95881	100nH	
5119	4822 157 11443	DISCRIMINATOR COIL	
5121	4822 242 10261	QUARTZ 75kHz	
5122	2422 549 44108	RF-COIL, LW-OSCILLATOR	LW only
5123	2422 549 44108	RF-COIL, MW-OSCILLATOR	

DIODES

6105©	4822 130 83075	HN1V02H
6106©	4822 130 83757	BAS216
6107©	9340 386 90115	BZX284-C11
6120©	4822 130 83757	BAS216

TRANSISTORS

7103©	5322 130 42756	BC857C	RDS only
7104	9322 003 64676	TBC337-40	LW only
7105	9322 003 64676	TBC337-40	LW only
7109©	4822 130 60373	BC856B	LW only
7110©	4822 130 60373	BC856B	
7111©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	
7122©	5322 130 42755	BC847C	LW only
7124©	5322 130 42755	BC847C	LW only

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC

POWER MODULE PWR207

(75W 6-Channel / 75W Twin Subwoofer)
(100W 6-Channel / 100W Twin Subwoofer)

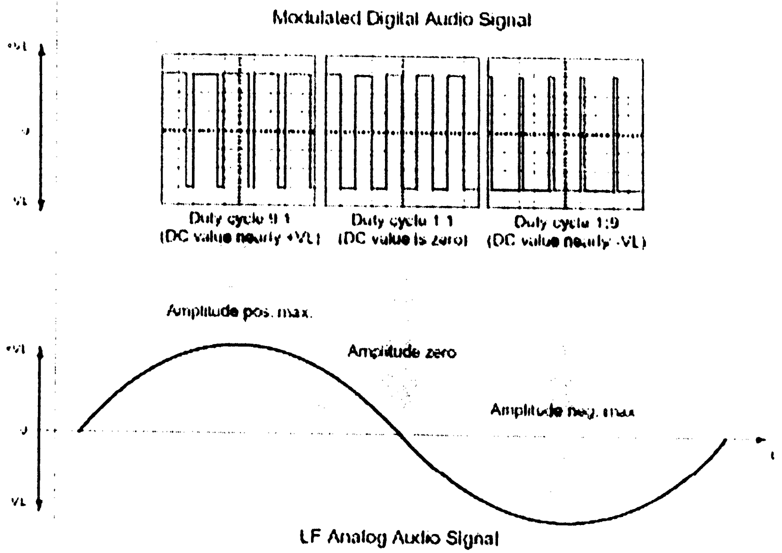
TABLE OF CONTENTS

Class-D Amplifier circuit description 8-1
Exploded view + mechanical parts 8-2
SW-out (SPK II) Board - Circuit & layout diagrams (Twin Subwoofer versions only) 8-3
Speaker (SPK I) Board - Circuit diagram 8-4
Speaker (SPK I) Board - Componet & Chip layouts 8-5
Mains & ECO Stby Board - Circuit diagram 8-6
Mains & ECO Stby Board - Component & Chip layouts 8-7
Mains & ECO Stby Board - Chip layouts Part A 8-8
Mains & ECO Stby Board - Chip layouts Part B 8-9
Supply Board - Circuit diagram 8-10
Supply Board - Component & Chip layouts 8-11
Supply Board - Chip layout Part A 8-12
Supply Board - Chip layout Part B 8-13
Amplifier Board - Clock Generator & connector - circuit 8-14
Amplifier Board - Amplifier circuit 8-15
Amplifier Board - Bottom view 8-16
Amplifier Board - Top view 8-17
Amplifier Board - Bottom view Part A 8-18
Amplifier Board - Bottom view Part B 8-19
Amplifier Board - Top view Part C 8-20
Amplifier Board - Top view Part D 8-21
Electrical parts list - Mains, Supply, Speaker & SW-out 8-22
Electrical parts list - Amplifier board 8-23

6-channel class-D amplifier

Basic operation of a class-D amplifier

Basically, the output stage of a class-D amplifier outputs a continuous square wave swinging between positive and negative power supplies with a fixed frequency ("clock" frequency) far beyond the audible range. The duty cycle of this square wave is modulated with the audio signal. The output is followed by a low-pass filter which eliminates the clock frequency and allows only the audio signal going to the speaker. See simplified drawing below.



Modulated Digital Audio Signal
+VL
0
-VL
Duty cycle 9:1 (DC value nearly +VL)
Duty cycle 1:1 (DC value is zero)
Duty cycle 1:9 (DC value nearly -VL)
Amplitude pos. max.
Amplitude zero
Amplitude neg. max
+VL
0
VL
t
LF Analog Audio Signal

Compared to a conventional power amplifier the benefits of the Class-D amplifier are:

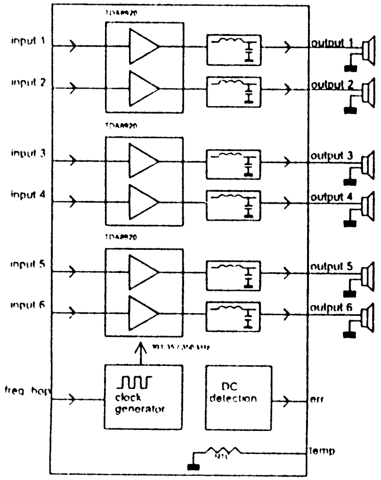
- higher effiency
- lower power dissipation
- smaller heatsink required
- smaller mains transformer required

The main disadvantage of this concept is:

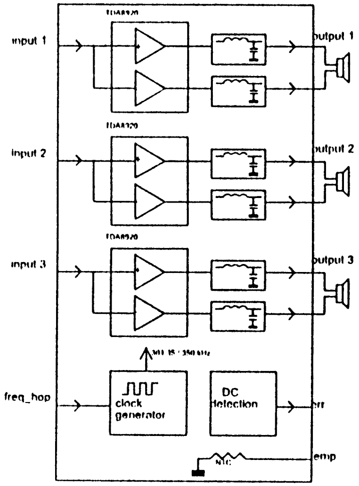
- The amplifier is operating with a high-frequency square wave at high amplitude and currents. This requires special precautions to prevent excessive electromagnetic ratiation (EMC).

Block diagram and operation

SINGLE ENDED 6 x 75W


TDA8920
input 1
input 2
input 3
input 4
input 5
input 6
output 1
output 2
output 3
output 4
output 5
output 6
freq_hop
clock generator
DC detection
err
temp
NTC

BRIDGE 3 x 100W


TDA8920
input 1
input 2
input 3
output 1
output 2
output 3
301.35 / 350 kHz
freq_hop
clock generator
DC detection
err
temp
NTC

- clock oscillator

The clock frequency is generated around IC7600. Using 2 extra transistors (7602 and 7608) and 2 ceramic resonators it can be operated at 2 frequencies: 602.7kHz and 700kHz. The frequency is selected by the signal "FREQ_HOP" coming from connector 1301 pin 9.
When FREQ_HOP is low, the output of 7600-1 will be high. This switches transistor 7602 on, and connects resonator 1600 (602.7kHz) to Inverter 7600-3. Similarly, when FREQ_HOP is high, resonator 1601 is connected to 7600-3.
The output frequency is divided by two by IC7607, resulting in 301.35kHz or 350kHz.
The purpose of a selectable clock frequency is related to the disturbance of the tuner which is built-in together with this amplifier. In MW, the software of the set microprocessor will select the other clock frequency in case the amplifier clock interferes with the tuned station.

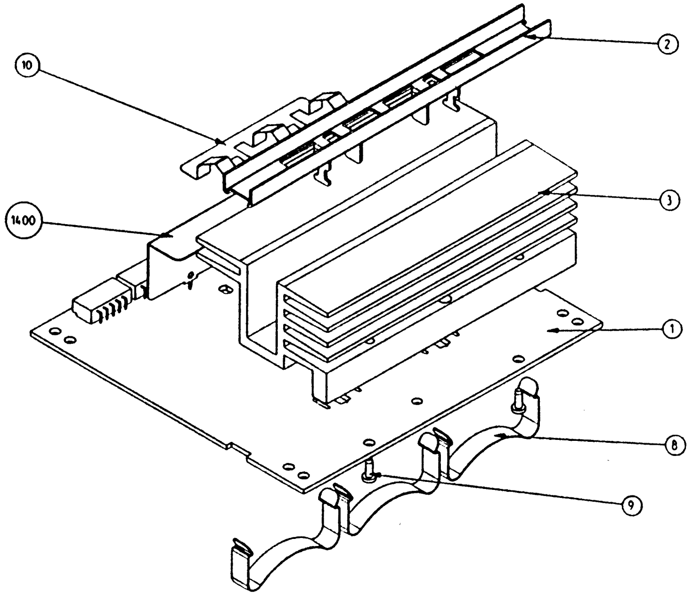
- **Class-D amplifier TDA8920 and low-pass filter**

The TDA8920 is a two channel audio power amplifier using class-D technology. The audio input signal is converted into a digital Pulse Width Modulated (PWM) signal via an analog input stage and PWM modulator. It is then fed to the power stage which outputs a high power PWM signal which switches between the main supply lines.
The TDA8920 is followed by a 2nd-order low-pass filter. It has a cut-off frequency around 50kHz and converts the PWM signal into analog audio signal across the loudspeaker.
The TDA8920 has a temperature protection and a current limiter built-in.
Furthermore, the IC can be put in active, mute and standby mode.
- Active mode (amplifier fully operational) with output signal.
- Mute mode: the amplifiers are operational, but the audio is muted
- Standby mode; with a very low supply current, the output stage is switched off.

- DC-detection

The DC-detection circuit monitors all 6 outputs for DC. Whenever one or more outputs contain DC for more than 1 second, the circuit will be activated. A positive voltage will activate transistor 7710 and pin 10 of connector 1301 will be pulled down. In case of a negative voltage, transistor 7716 will be activated, which in turn activates 7710. The set microprocessor will take further action.

MECHANICAL EXPLODED VIEW


10
2
1400
3
1
8
9

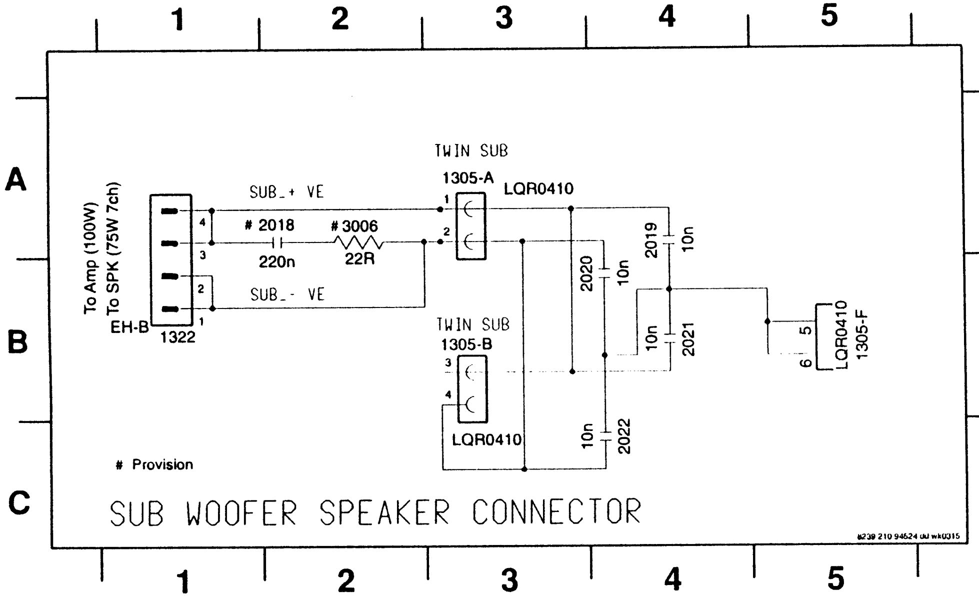
3104 217 07180 bl110

MECHANICAL PARTS LIST & SCREWS

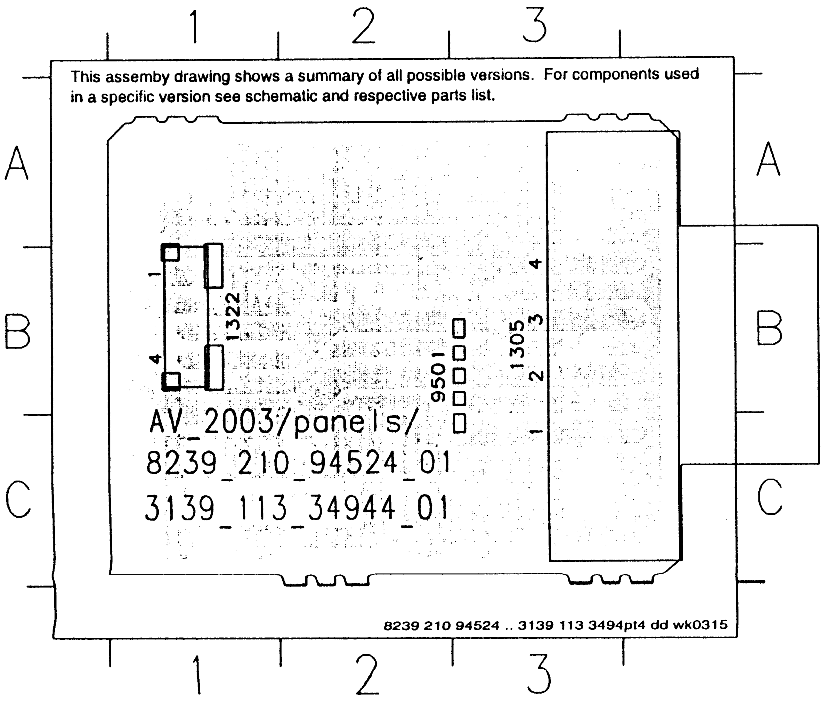
8	4822 492 11735	SPRING, TRANSISTOR
9	-	D2.3 x 8
10	3104 211 29881	EARTH SPRING

Note: Only the parts mentioned in this list are normal service spare parts.

SW-OUT (SPK II) BOARD - CIRCUIT & LAYOUT DIAGRAMS (For Twin Subwoofer versions only)

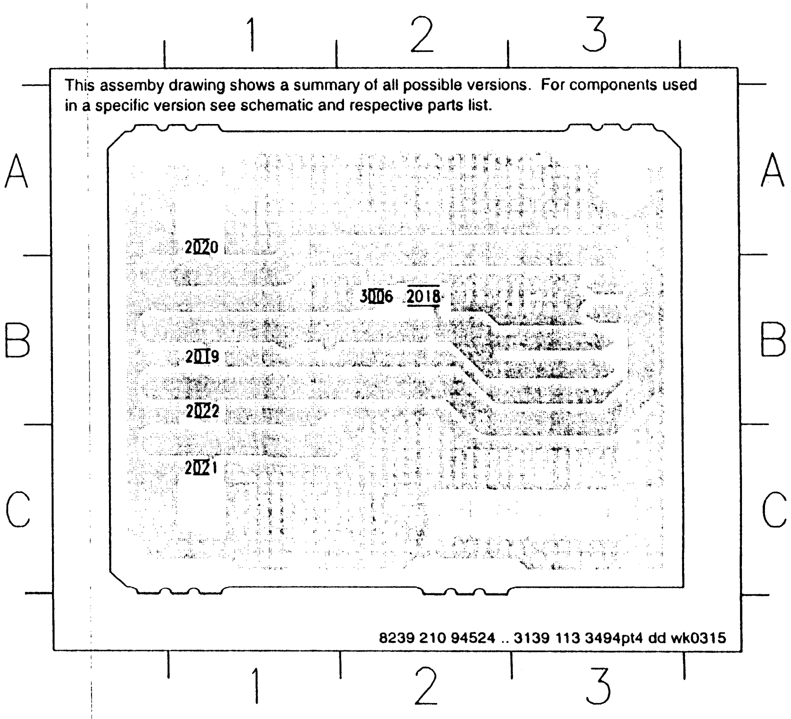

1
2
3
4
5
A
B
C
To Amp (100W)
To SPK (75W 7ch)
EH-B
1322
SUB_+ VE
SUB_- VE
# 2018
220n
# 3006
22R
TWIN SUB
1305-A
LQR0410
TWIN SUB
1305-B
LQR0410
2019
10n
2020
10n
2021
10n
2022
10n
LQR0410
1305-F
# Provision
SUB WOOFER SPEAKER CONNECTOR
8239 210 94524 dd wk0315

1305-A	A3
1305-B	B3
1305-F	B5
1322	B1
2018	A2
2019	A4
2020	B4
2021	B4
2022	C4
3006	A2


This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

1
2
3
A
B
C
1322
9501
1305
AV_2003/panels/
8239_210_94524_01
3139_113_34944_01
8239 210 94524 .. 3139 113 3494pt4 dd wk0315

1305	B3
1322	B1
9501	B2

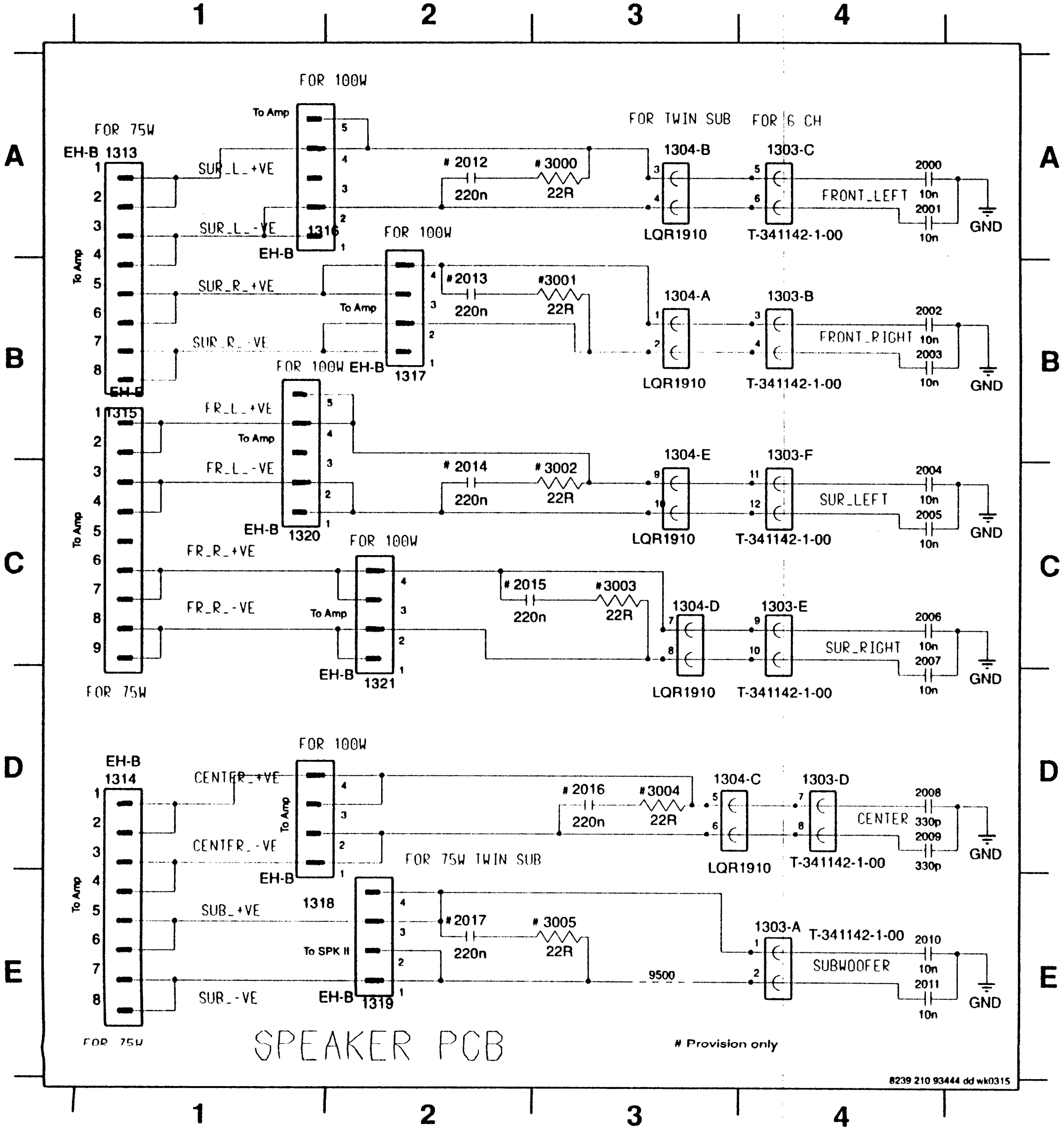

This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

1
2
3
A
B
C
2020
3006
2018
2019
2022
2021
8239 210 94524 .. 3139 113 3494pt4 dd wk0315

2018	B2
2019	B1
2020	A1
2021	C1
2022	B1
3006	B2

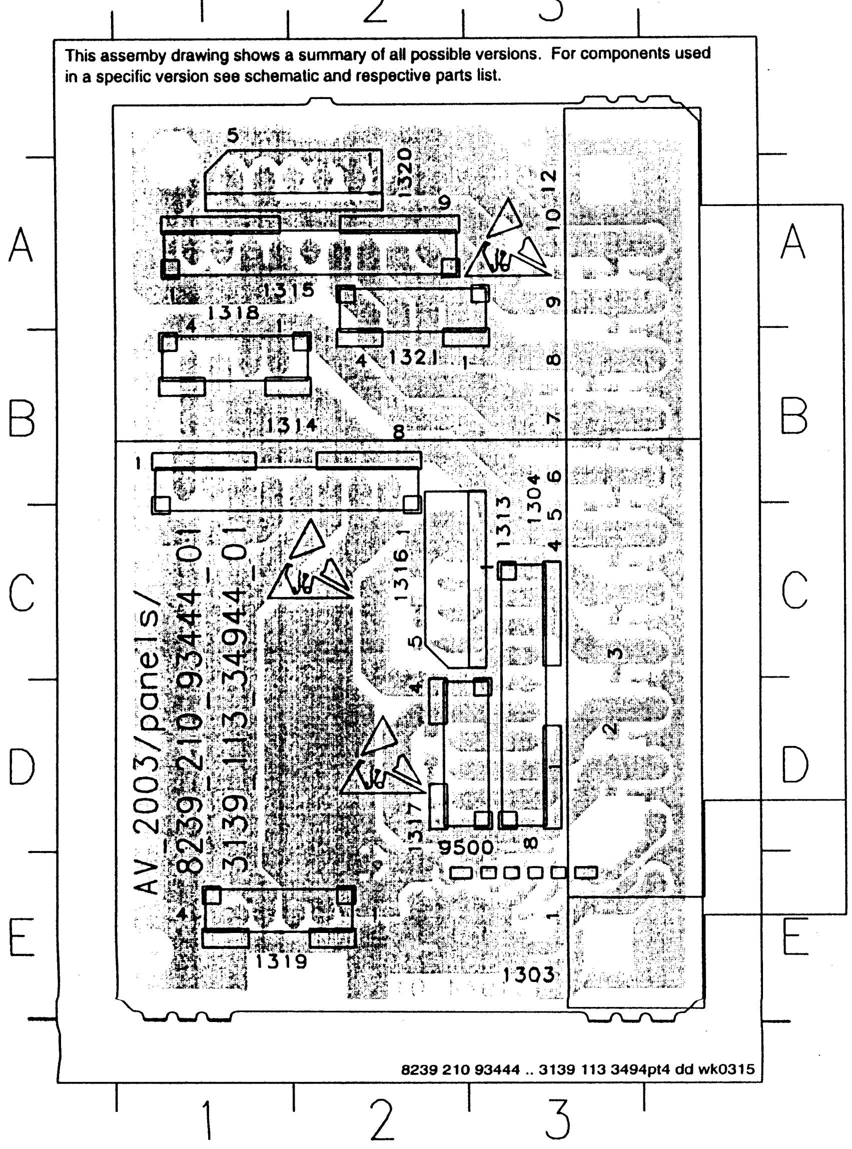
SPEAKER (SPK I) BOARD - CIRCUIT DIAGRAM

1303-A E4	1303-F B4	1304-E B3	1317 B2	2000 A4	2005 C4	2010 E4	2015 C2	3002 C3
1303-B B4	1304-A B3	1313 A1	1318 E2	2001 A4	2006 C4	2011 E4	2016 D3	3003 C3
1303-C A4	1304-B A3	1314 D1	1319 E2	2002 B4	2007 C4	2012 A2	2017 E2	3004 D3
1303-D D4	1304-C D3	1315 B1	1320 C1	2003 B4	2008 D4	2013 B2	3000 A3	3005 E3
1303-E C4	1304-D C3	1316 A2	1321 D2	2004 C4	2009 D4	2014 C2	3001 B3	9500 E3


1
2
3
4
A
B
C
D
E
FOR 100W
To Amp
FOR 75W
EH-B 1313
SUR_L_+VE
SUR_L_-VE
1316
EH-B
FOR 100W
To Amp
SUR_R_+VE
SUR_R_-VE
EH-B
1317
#2012
220n
#3000
22R
#2013
220n
#3001
22R
FOR TWIN SUB
FOR 6 CH
1304-B
1303-C
LQR1910
T-341142-1-00
FRONT_LEFT
2000
10n
2001
10n
GND
1304-A
1303-B
FRONT_RIGHT
2002
10n
2003
10n
FOR 100W EH-B
EH-B
1315
FR_L_+VE
To Amp
FR_L_-VE
EH-B
1320
#2014
220n
#3002
22R
1304-E
1303-F
SUR_LEFT
2004
10n
2005
10n
FOR 100W
FR_R_+VE
FR_R_-VE
To Amp
EH-B
1321
#2015
220n
#3003
22R
1304-D
1303-E
SUR_RIGHT
2006
10n
2007
10n
FOR 75W
FOR 100W
EH-B
1314
CENTER_+VE
CENTER_-VE
To Amp
EH-B
#2016
220n
#3004
22R
1304-C
1303-D
CENTER
2008
330p
2009
330p
FOR 75W TWIN SUB
1318
SUB_+VE
SUB_-VE
To SPK II
EH-B
1319
#2017
220n
#3005
22R
9500
1303-A
T-341142-1-00
SUBWOOFER
2010
10n
2011
10n
FOR 75W
SPEAKER PCB
# Provision only
8239 210 93444 dd wk0315

SPEAKER (SPK I) BOARD - COMPONENT & CHIP LAYOUTS

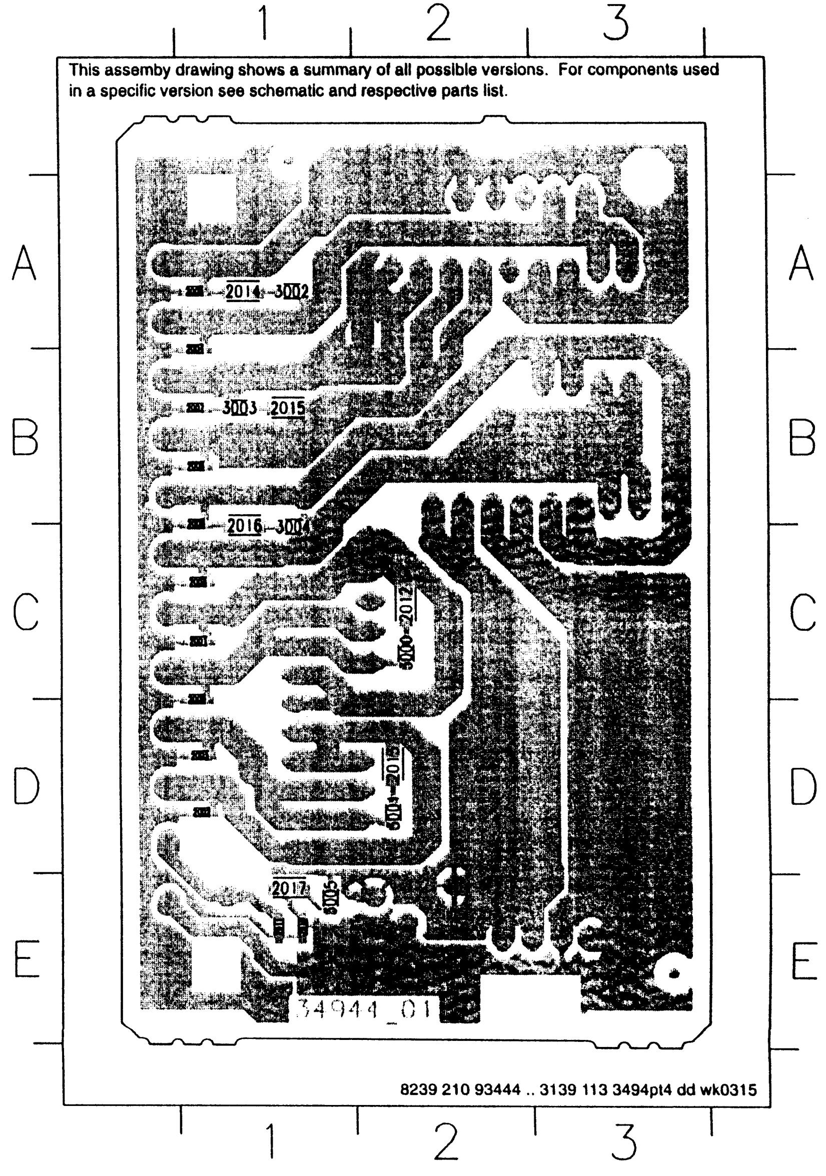
1303	E3	1313	C3	1315	A1	1317	D2	1319	E1	1321	B2
1304	B3	1314	B1	1316	C2	1318	A1	1320	A2	9500	D2


1
2
3
A
B
C
D
E
5
1320
9
12
10
1315
1318
4
1321
1
8
1314
7
6
1304
1313
1316
AV 2003/panels/
8239 210 93444_01
3139 113 34944_01
4
3
2
1317
9500
1319
1303

This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

8239 210 93444 .. 3139 113 3494pt4 dd wk0315

2000	C1	2005	A1	2010	E1	2015	B1	3002	A1
2001	C1	2006	B1	2011	E1	2016	C1	3003	B1
2002	D1	2007	B1	2012	C2	2017	E1	3004	C1
2003	D1	2008	C1	2013	D2	3000	C2	3005	E1
2004	A1	2009	B1	2014	A1	3001	D2		

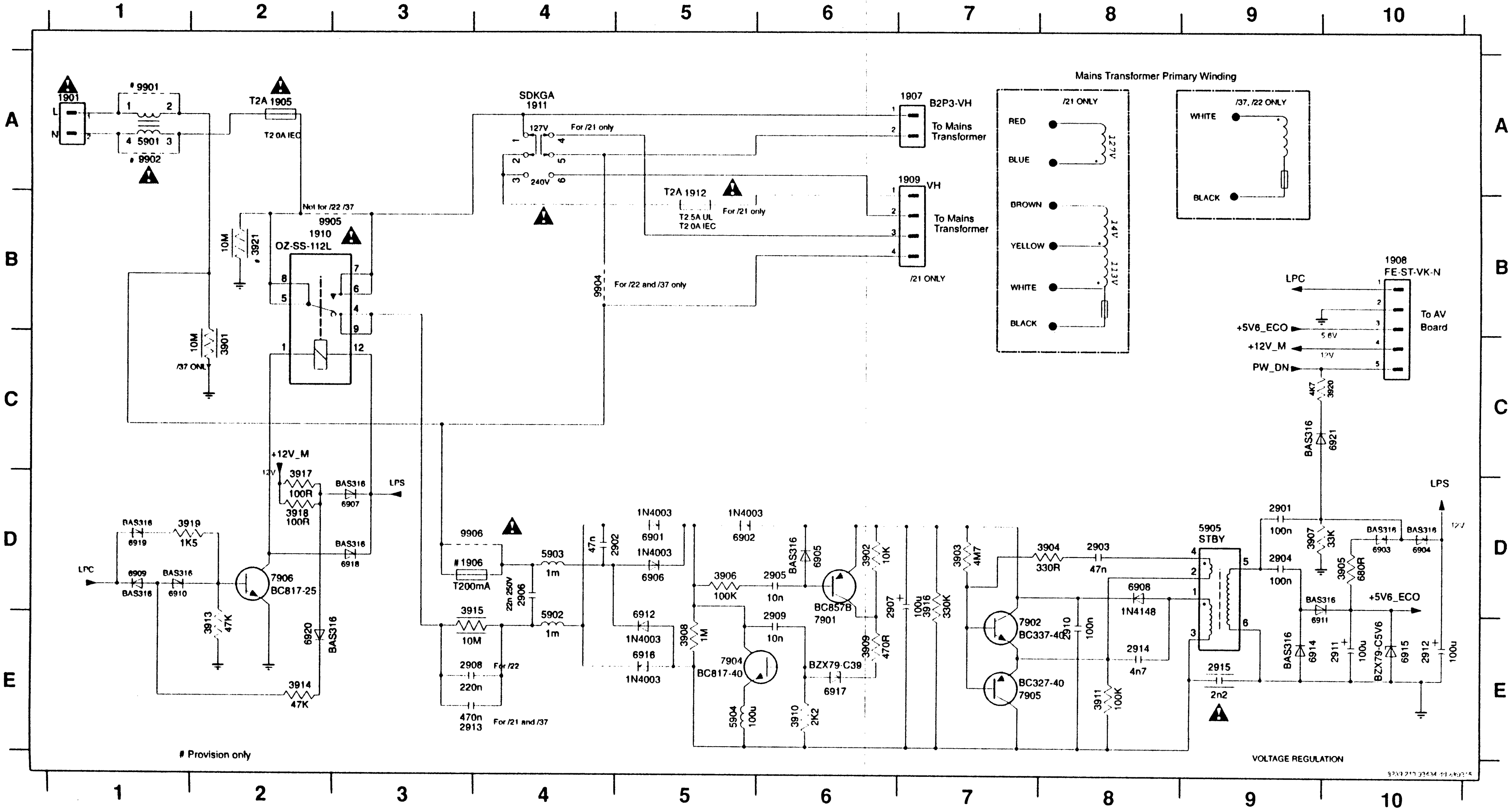

1
2
3
A
B
C
D
E
2014
3002
3003
2015
2016
3004
2012
3000
2013
3001
2017
3005
34944_01

This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

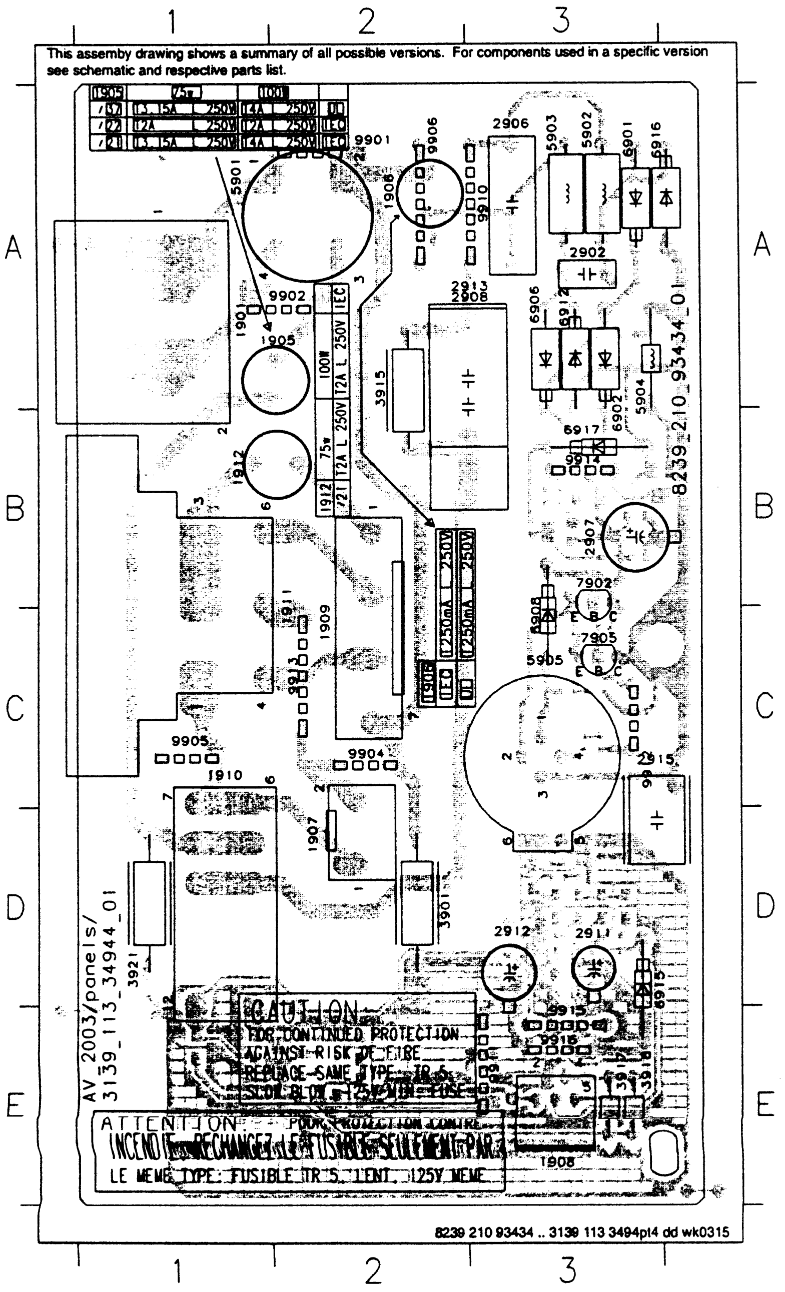
8239 210 93444 .. 3139 113 3494pt4 dd wk0315

MAINS & ECO STBY BOARD - CIRCUIT DIAGRAM

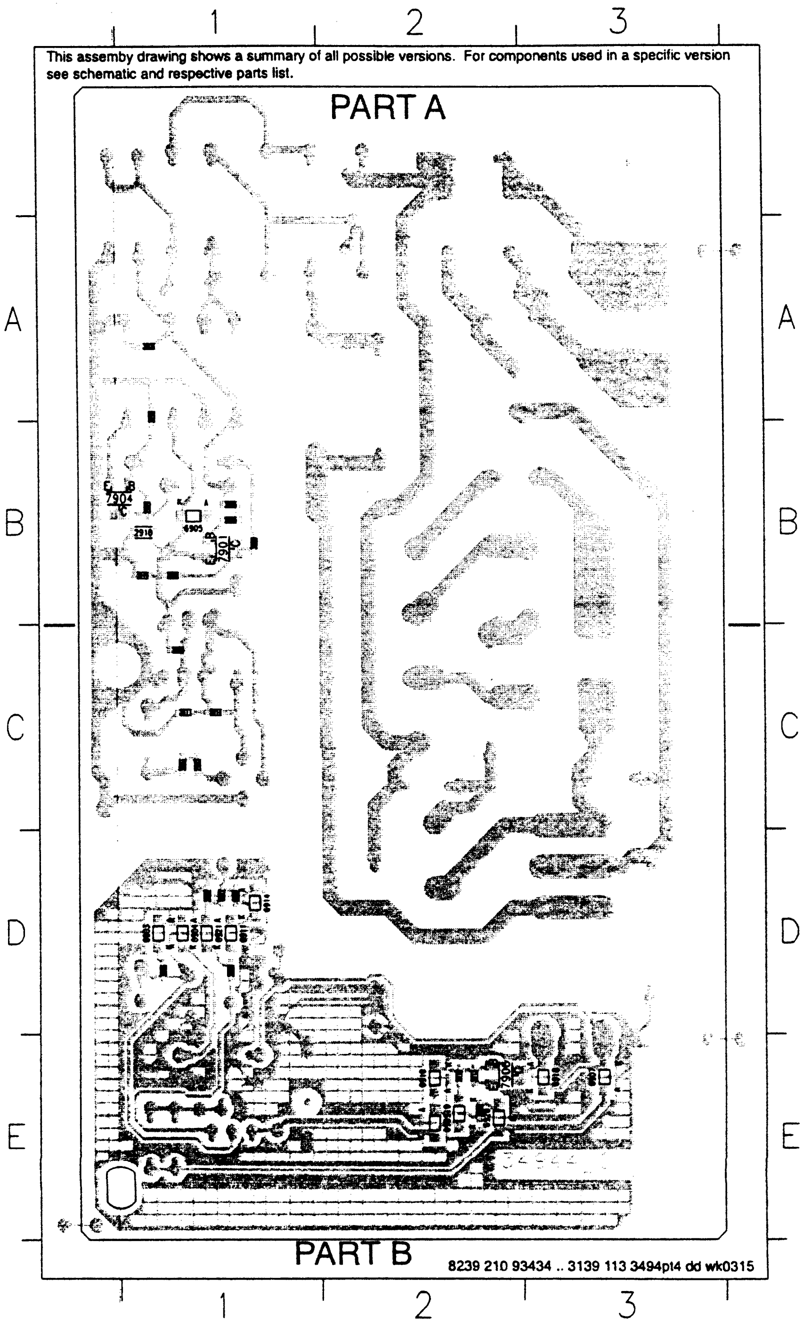
1901	A1
1905	A2
1906	D3
1907	A7
1908	B10
1909	A6
1910	B2
1911	A4
1912	B5
2901	D9
2902	D4
2903	D8
2904	D9
2905	D6
2906	D4
2907	D6
2908	E3
2909	E6
2910	E8
2911	E10
2912	E10
2913	E3
2914	E8
2915	E9
3901	C2
3902	D6
3903	D7
3904	D8
3905	D10
3906	D5
3907	D9
3908	E5
3909	E6
3910	E6
3911	E8
3913	E2
3914	E2
3915	E3
3916	D7
3917	D2
3918	D2
3919	D1
3920	C10
3921	B2
5901	A1
5902	E4
5903	D4
5904	E5
5905	D9
6901	D5
6902	D5
6903	D10
6904	D10
6905	D6
6906	D5
6907	D3
6908	D8
6909	D1
6910	D1
6911	D9
6912	E5
6914	E9
6915	E10
6916	E5
6917	E6
6918	D3
6919	D1
6920	E2
6921	C10
7901	E6
7902	E7
7904	E5
7905	E7
7906	D2
9901	A1
9902	A1
9904	B4
9905	B2
9906	D3


1 2 3 4 5 6 7 8 9 10
A B C D E
1901
L
N
# 9901
1 2
4 5901 3
# 9902
T2A 1905
T2 0A IEC
SDKGA
1911
127V
For /21 only
240V
T2A 1912
T2 5A UL
T2 0A IEC
For /21 only
1907
B2P3-VH
To Mains Transformer
1909
VH
To Mains Transformer
/21 ONLY
Mains Transformer Primary Winding
/21 ONLY
RED
BLUE
127V
BROWN
YELLOW
WHITE
BLACK
14V
113V
/37, /22 ONLY
WHITE
BLACK
Not for /22 /37
9905
1910
OZ-SS-112L
10M
3921
10M
3901
/37 ONLY
9904
For /22 and /37 only
1908
FE-ST-VK-N
LPC
+5V6_ECO
5.6V
+12V_M
12V
PW_DN
To AV Board
4K7
3920
BAS316
6921
+12V_M
12V
3917
100R
3918
100R
BAS316
6907
LPS
BAS316
6918
BAS316
3919
6919
1K5
LPC
6909
BAS316
BAS316
6910
7906
BC817-25
3913
47K
6920
BAS316
3914
47K
9906
#1906
T200mA
22n 250V
2906
5903
1m
3915
10M
5902
1m
2908
For /22
220n
470n
2913
For /21 and /37
47n
2902
1N4003
6901
1N4003
6906
6912
1N4003
6916
1N4003
1N4003
6902
3906
100K
2905
10n
BAS316
6905
3902
10K
BC857B
7901
2907
100u
3916
330K
3908
1M
2909
10n
7904
BC817-40
BZX79-C39
6917
3909
470R
5904
100u
3910
2K2
3903
4M7
3904
330R
2903
47n
6908
1N4148
7902
BC337-40
2910
100n
2914
4n7
BC327-40
7905
3911
100K
5905
STBY
2915
2n2
2901
100n
2904
100n
3907
33K
3905
680R
BAS316
6903
BAS316
6904
12V
LPS
BAS316
6911
+5V6_ECO
BAS316
6914
2911
100u
BZX79-C5V6
6915
2912
100u
# Provision only
VOLTAGE REGULATION

MAINS & ECO STBY BOARD - COMPONENT & CHIP LAYOUTS

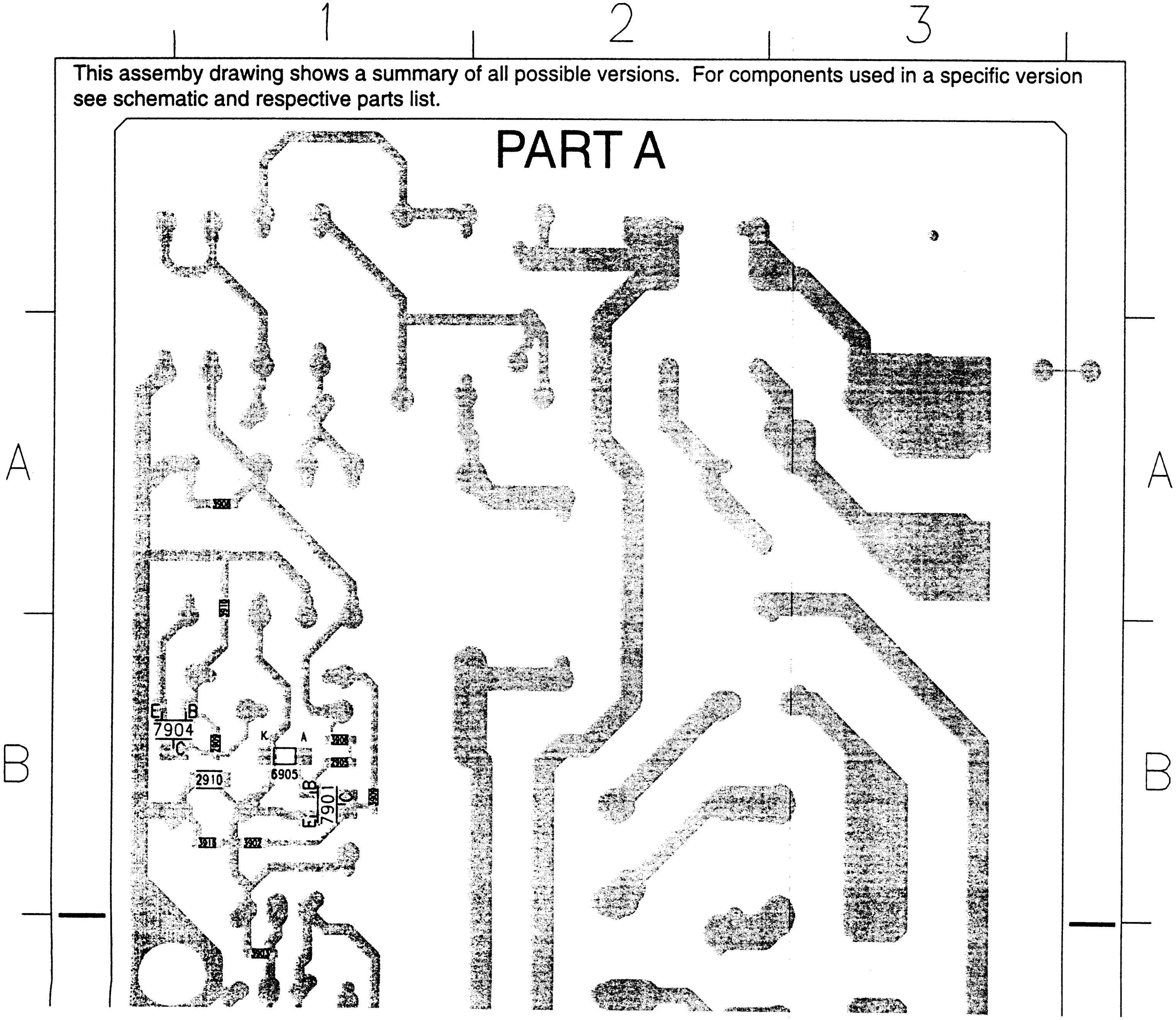

This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.
1
2
3
A
B
C
D
E
1905
75w
100W
/37
T3.15A L 250V
T4A L 250V
DL
/22
T2A L 250V
T2A L 250V
IEC
/21
T3.15A L 250V
T4A L 250V
IEC
9901
5901
1906
9906
2906
5903
5902
6901
6916
9910
2902
9902
1901
1905
2913
2908
6906
6912
3915
6917
6902
5904
9914
8239_210_93434_01
1912
100W
T2A L 250V
75w
T2A L 250V
1912
/21
1911
1909
9913
2907
7902
6908
7905
5905
T250mA L 250V
T250mA L 250V
1909
IEC
DL
9905
9904
1910
1907
2915
3901
2912
2911
6915
3921
AV_2003/panels/
3139_113_34944_01
CAUTION
FOR CONTINUED PROTECTION
AGAINST RISK OF FIRE
REPLACE SAME TYPE T2.5
SLOW BLOW 125V MIN FUSE
ATTENTION POUR PROTECTION CONTRE
INCENDIE REMPLACEZ LE FUSIBLE SEULEMENT PAR
LE MEME TYPE: FUSIBLE T2.5 LENT, 125V MEME
9915
9916
3917
3918
1908
8239 210 93434 .. 3139 113 3494pt4 dd wk0315

1901	A1
1905	A2
1906	A2
1907	D2
1908	E3
1909	C2
1910	C1
1911	B2
1912	B1
2902	A3
2906	A3
2907	B3
2908	A3
2911	D3
2912	D3
2913	A3
2915	C3
3901	D2
3915	A2
3917	E3
3918	E3
3921	D1
5901	A1
5902	A3
5903	A3
5904	A3
5905	C3
6901	A3
6902	B3
6906	A3
6908	C3
6912	A3
6915	D3
6916	A3
6917	B3
7902	B3
7905	C3
9901	A2
9902	A2
9904	C2
9905	C1
9906	A2
9910	A3
9911	E3
9912	C3
9913	C2
9914	B3
9915	E3
9916	E3


1
2
3
A
B
C
D
E
This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.
PART A
7904
7901
PART B
8239 210 93434 .. 3139 113 3494pt4 dd wk0315

2901	D1
2903	C1
2904	D1
2905	B1
2909	B1
2910	B1
2914	C1
3902	B1
3903	C1
3904	C1
3905	D1
3906	B1
3907	D1
3908	A1
3909	B1
3910	A1
3911	C1
3913	E2
3914	E2
3916	B1
3919	E2
3920	D1
6903	D1
6904	D1
6905	B1
6907	E3
6909	E2
6910	E2
6911	D1
6914	D1
6918	E3
6919	E2
6920	E2
6921	D1
7901	B1
7904	B1
7906	E2

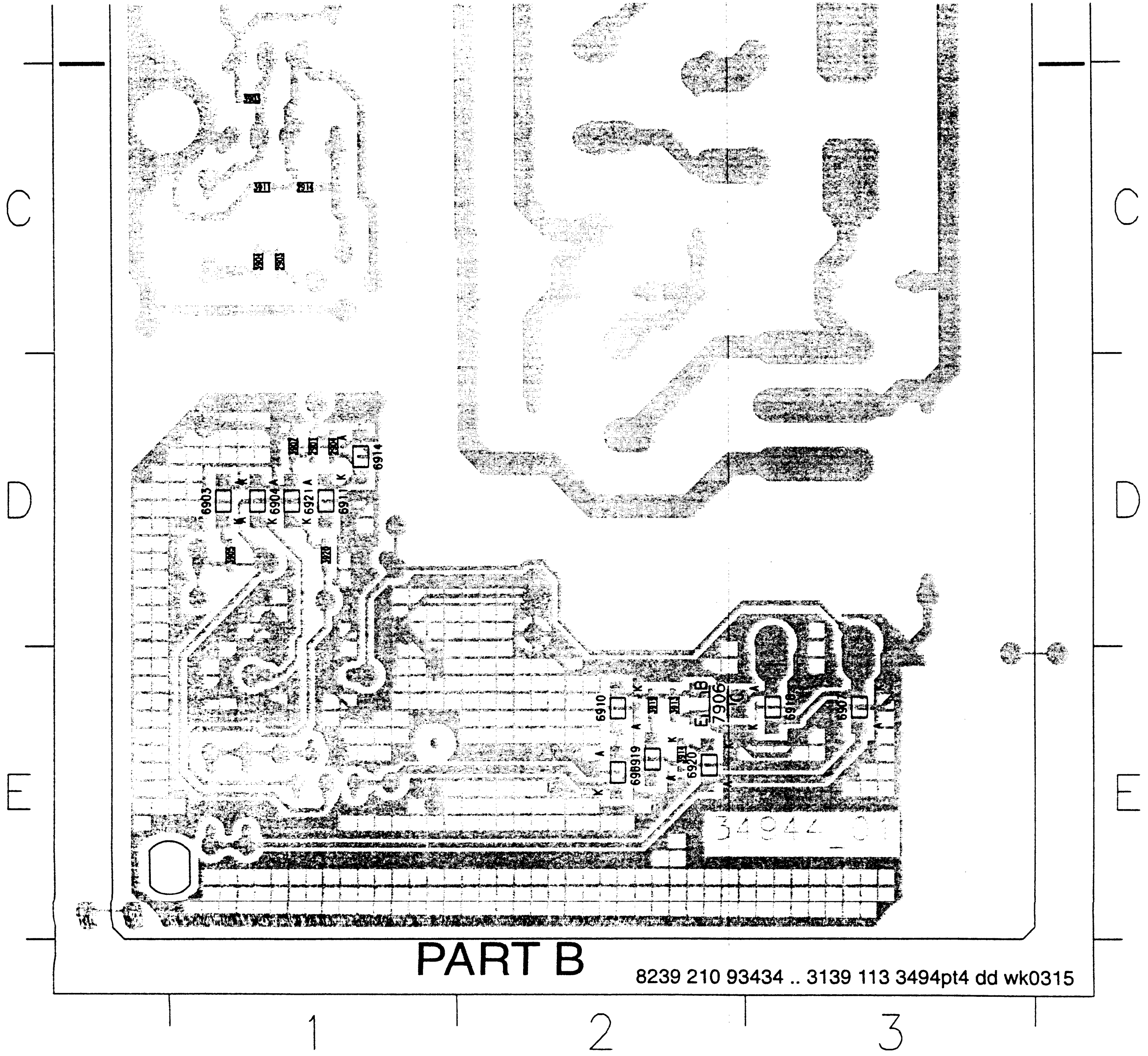
MAINS & ECO STBY BOARD - CHIP LAYOUT PART A



This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

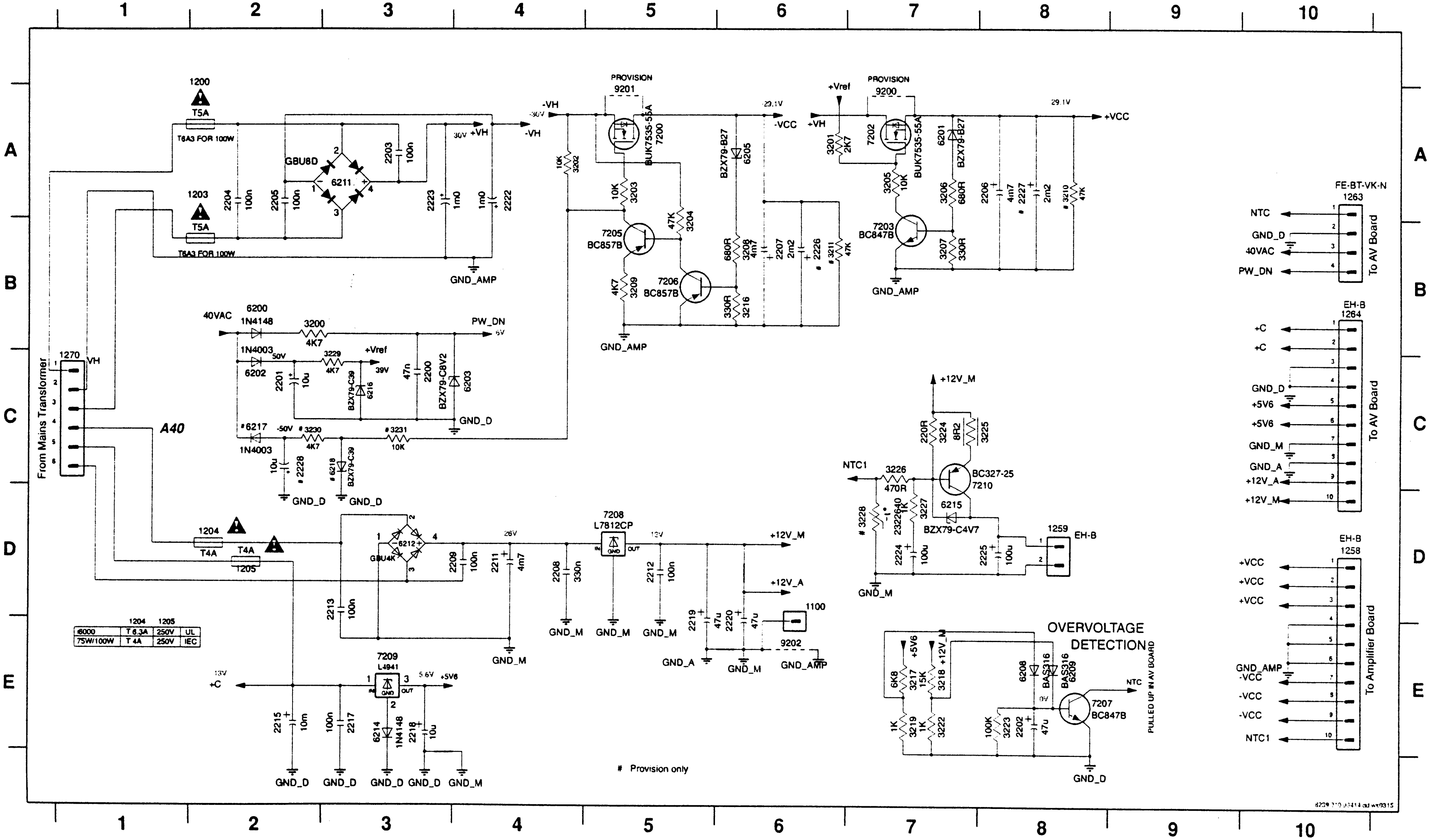
2901	D1
2903	C1
2904	D1
2905	B1
2909	B1
2910	B1
2914	C1
3902	B1
3903	C1
3904	C1
3905	D1
3906	B1
3907	D1
3908	A1
3909	B1
3910	A1
3911	C1
3913	E2
3914	E2
3916	B1
3919	E2
3920	D1
6903	D1
6904	D1
6905	B1
6907	E3
6909	E2
6910	E2
6911	D1
6914	D1
6918	E3
6919	E2
6920	E2
6921	D1
7901	B1
7904	B1
7906	E2

MAINS & ECO STBY BOARD - CHIP LAYOUT PART B


C
D
E
6914
6903
6904
6921
6911
6910
6919
6920
7906
34944_01
PART B
8239 210 93434 .. 3139 113 3494pt4 dd wk0315
1
2
3

SUPPLY BOARD - CIRCUIT DIAGRAM

1100	D6
1200	A2
1203	A2
1204	D2
1205	D2
1258	D10
1259	D8
1263	A10
1264	B10
1270	C1
2200	C3
2201	C2
2202	E8
2203	A3
2204	A2
2205	A2
2206	A8
2207	B6
2208	D4
2209	D4
2211	D4
2212	D5
2213	D3
2215	E2
2217	E3
2218	E3
2219	E5
2220	E6
2222	A4
2223	A3
2224	D7
2225	D8
2226	B6
2227	A8
2228	C2
3200	B2
3201	A6
3202	A4
3203	A5
3204	B5
3205	A7
3206	A7
3207	B7
3208	B6
3209	B5
3210	A8
3211	B6
3216	B6
3217	E7
3218	E7
3219	E7
3222	E7
3223	E8
3224	C7
3225	C8
3226	C7
3227	D7
3228	D7
3229	C3
3230	C2
3231	C3
6200	B2
6201	A7
6202	C2
6203	C4
6205	A6
6208	E8
6209	E8
6211	A3
6212	D3
6214	E3
6215	D7
6216	C3
6217	C2
6218	C3
7200	A5
7202	A7
7203	B7
7205	B5
7206	B5
7207	E8
7208	D5
7209	E3
7210	C7
9200	A7
9201	A5
9202	E6


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
1200
T5A
T6A3 FOR 100W
1203
T5A
T6A3 FOR 100W
GBU8D
6211
2204
100n
2205
100n
2203
100n
2223
1m0
1m0
2222
30V +VH
-VH
GND_AMP
PROVISION
9201
-VH
30V
BUK7535-55A
7200
10K
3202
10K
3203
7205
BC857B
47K
3204
4K7
3209
7206
BC857B
GND_AMP
29.1V
-VCC
BZX79-B27
6205
680R
3208
4m7
2207
2m2
2226
3211
47K
330R
3216
+Vref
PROVISION
9200
+VH
3201
2K7
7202
BUK7535-55A
6201
BZX79-B27
3205
10K
7203
BC847B
GND_AMP
3206
680R
3207
330R
2206
4m7
2227
2m2
3210
47K
29.1V
+VCC
40VAC
6200
1N4148
3200
4K7
PW_DN
5V
1N4003
50V
6202
3229
4K7
+Vref
39V
2201
10u
BZX79-C39
6216
47n
2200
BZX79-C8V2
6203
GND_D
6217
-50V
3230
4K7
3231
10K
1N4003
10u
2228
6218
BZX79-C39
GND_D
GND_D
1270
VH
From Mains Transformer
A40
1204
T4A
T4A
1205
6212
GBU4K
2213
100n
2209
100n
26V
2211
4m7
GND_M
7208
L7812CP
IN
GND
OUT
12V
+12V_M
2208
330n
GND_M
GND_M
2212
100n
GND_M
+12V_A
2219
47u
2220
47u
1100
9202
GND_A
GND_M
GND_AMP
1204
1205
6000
T 6.3A
250V
UL
75W/100W
T 4A
250V
IEC
7209
L4941
13V
+C
5.6V
+5V6
2215
10m
100n
2217
6214
1N4148
2218
10u
GND_D
GND_D
GND_D
GND_D
GND_M
# Provision only
+12V_M
220R
3224
8R2
3225
NTC1
3226
470R
BC327-25
7210
6215
BZX79-C4V7
3228
2232640
3227
1K
2224
100u
2225
100u
GND_M
1259
EH-B
OVERVOLTAGE
DETECTION
+5V6
+12V_M
6K8
3217
15K
3218
6208
BAS316
BAS316
6209
NTC
0V
7207
BC847B
PULLED UP IN AV BOARD
1K
3219
1K
3222
100K
3223
2202
47u
GND_D
FE-BT-VK-N
1263
NTC
GND_D
40VAC
PW_DN
To AV Board
EH-B
1264
+C
+C
GND_D
+5V6
+5V6
GND_M
GND_A
+12V_A
+12V_M
To AV Board
EH-B
1258
+VCC
+VCC
+VCC
GND_AMP
-VCC
-VCC
-VCC
NTC1
To Amplifier Board

POWER MODULE PWR207

(75W 6-Channel / 75W Twin Subwoofer)
(100W 6-Channel / 100W Twin Subwoofer)

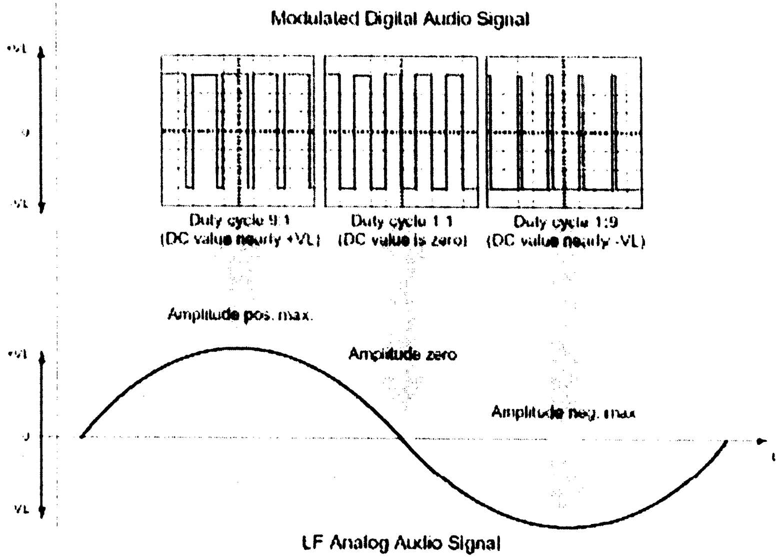
TABLE OF CONTENTS

Class-D Amplifier circuit description 8-1
Exploded view + mechanical parts 8-2
SW-out (SPK II) Board - Circuit & layout diagrams (Twin Subwoofer versions only) 8-3
Speaker (SPK I) Board - Circuit diagram 8-4
Speaker (SPK I) Board - Componet & Chip layouts 8-5
Mains & ECO Stby Board - Circuit diagram 8-6
Mains & ECO Stby Board - Component & Chip layouts 8-7
Mains & ECO Stby Board - Chip layouts Part A 8-8
Mains & ECO Stby Board - Chip layouts Part B 8-9
Supply Board - Circuit diagram 8-10
Supply Board - Component & Chip layouts 8-11
Supply Board - Chip layout Part A 8-12
Supply Board - Chip layout Part B 8-13
Amplifier Board - Clock Generator & connector - circuit 8-14
Amplifier Board - Amplifier circuit 8-15
Amplifier Board - Bottom view 8-16
Amplifier Board - Top view 8-17
Amplifier Board - Bottom view Part A 8-18
Amplifier Board - Bottom view Part B 8-19
Amplifier Board - Top view Part C 8-20
Amplifier Board - Top view Part D 8-21
Electrical parts list - Mains, Supply, Speaker & SW-out 8-22
Electrical parts list - Amplifier board 8-23

6-channel class-D amplifier

Basic operation of a class-D amplifier

Basically, the output stage of a class-D amplifier outputs a continuous square wave swinging between positive and negative power supplies with a fixed frequency ("clock" frequency) far beyond the audible range. The duty cycle of this square wave is modulated with the audio signal. The output is followed by a low-pass filter which eliminates the clock frequency and allows only the audio signal going to the speaker. See simplified drawing below.



Compared to a conventional power amplifier the benefits of the Class-D amplifier are:

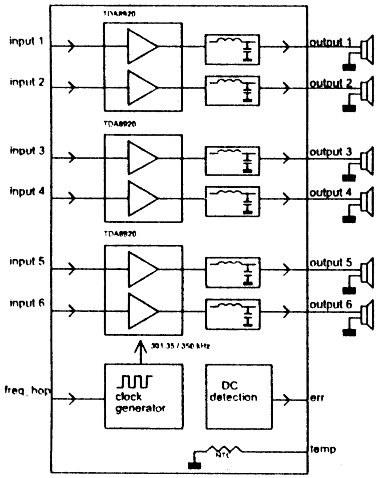
- higher effiency
- lower power dissipation
- smaller heatsink required
- smaller mains transformer required

The main disadvantage of this concept is:

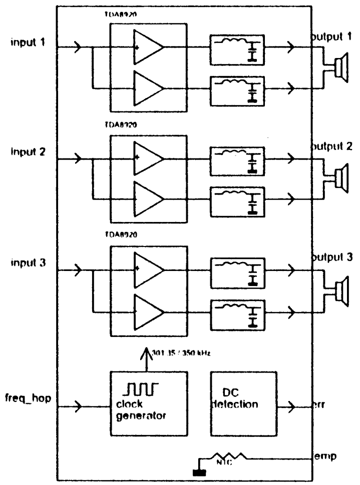
- The amplifier is operating with a high-frequency square wave at high amplitude and currents. This requires special precautions to prevent excessive electromagnetic ratiation (EMC).

Block diagram and operation

SINGLE ENDED 6 x 75W


TDA8920
input 1
input 2
output 1
output 2
TDA8920
input 3
input 4
output 3
output 4
TDA8920
input 5
input 6
output 5
output 6
301.35 / 350 kHz
freq_hop
clock generator
DC detection
err
NTC
temp

BRIDGE 3 x 100W


TDA8920
input 1
output 1
TDA8920
input 2
output 2
TDA8920
input 3
output 3
301.35 / 350 kHz
freq_hop
clock generator
DC detection
err
NTC
temp

- **clock oscillator**

The clock frequency is generated around IC7600. Using 2 extra transistors (7602 and 7608) and 2 ceramic resonators it can be operated at 2 frequencies: 602.7kHz and 700kHz. The frequency is selected by the signal "FREQ_HOP" coming from connector 1301 pin 9.
When FREQ_HOP is low, the output of 7600-1 will be high. This switches transistor 7602 on, and connects resonator 1600 (602.7kHz) to inverter 7600-3. Similarly, when FREQ_HOP is high, resonator 1601 is connected to 7600-3.
The output frequency is divided by two by IC7607, resulting in 301.35kHz or 350kHz.
The purpose of a selectable clock frequency is related to the disturbance of the tuner which is built-in together with this amplifier. In MW, the software of the set microprocessor will select the other clock frequency in case the amplifier clock interferes with the tuned station.

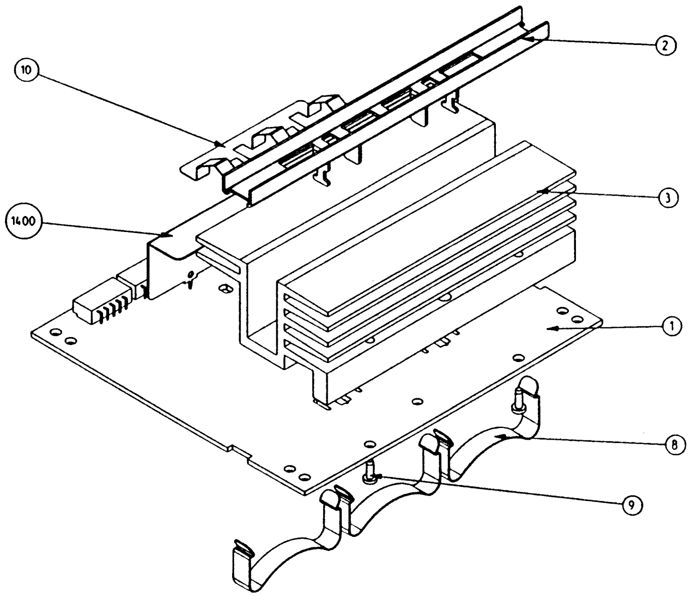
- **Class-D amplifier TDA8920 and low-pass filter**

The TDA8920 is a two channel audio power amplifier using class-D technology. The audio input signal is converted into a digital Pulse Width Modulated (PWM) signal via an analog input stage and PWM modulator. It is then fed to the power stage which outputs a high power PWM signal which switches between the main supply lines.
The TDA8920 is followed by a 2nd-order low-pass filter. It has a cut-off frequency around 50kHz and converts the PWM signal into analog audio signal across the loudspeaker.
The TDA8920 has a temperature protection and a current limiter built-in.
Furthermore, the IC can be put in active, mute and standby mode.
- Active mode (amplifier fully operational) with output signal.
- Mute mode: the amplifiers are operational, but the audio is muted
- Standby mode; with a very low supply current, the output stage is switched off.

- **DC-detection**

The DC-detection circuit monitors all 6 outputs for DC. Whenever one or more outputs contain DC for more than 1 second, the circuit will be activated. A positive voltage will activate transistor 7710 and pin 10 of connector 1301 will be pulled down. In case of a negative voltage, transistor 7716 will be activated, which in turn activates 7710. The set microprocessor will take further action.

MECHANICAL EXPLODED VIEW

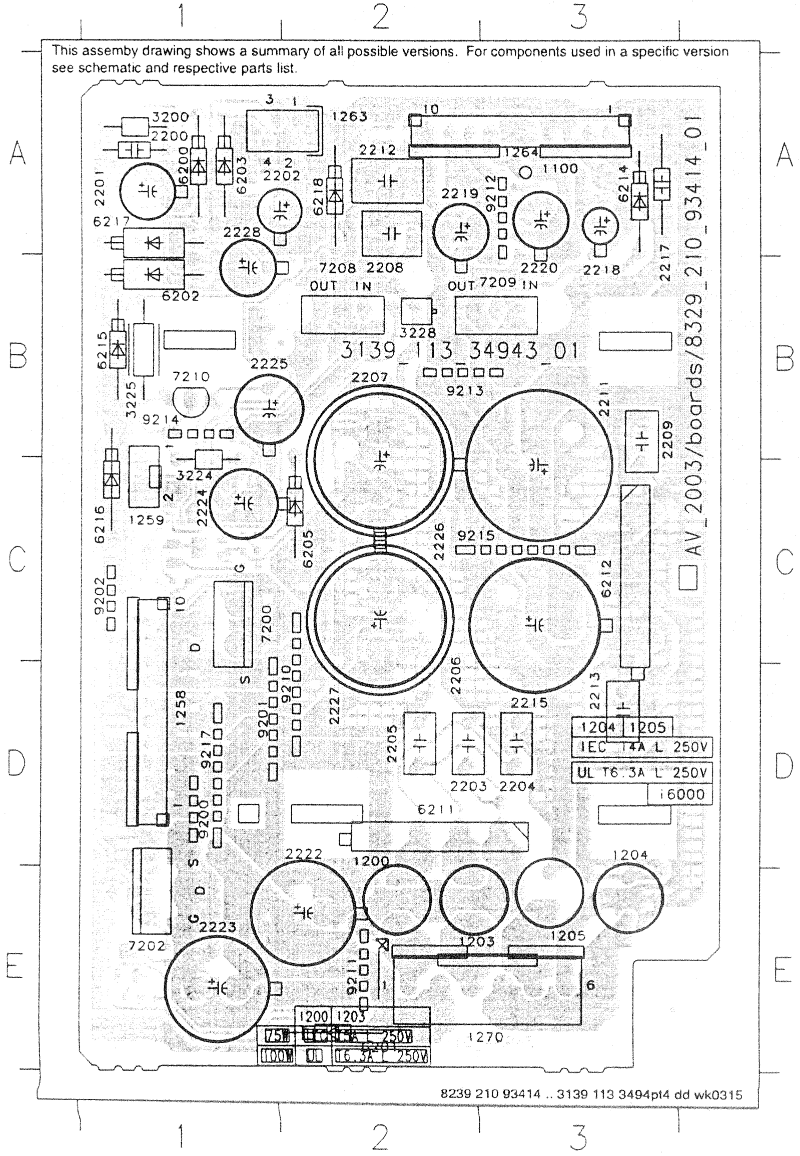

2
10
3
1400
1
8
9

3104 217 07180 bl110

MECHANICAL PARTS LIST & SCREWS		
8	4822 492 11735	SPRING, TRANSISTOR
9	-	D2.3 x 8
10	3104 211 29881	EARTH SPRING

Note: Only the parts mentioned in this list are normal service spare parts.

SUPPLY BOARD - COMPONENT LAYOUT

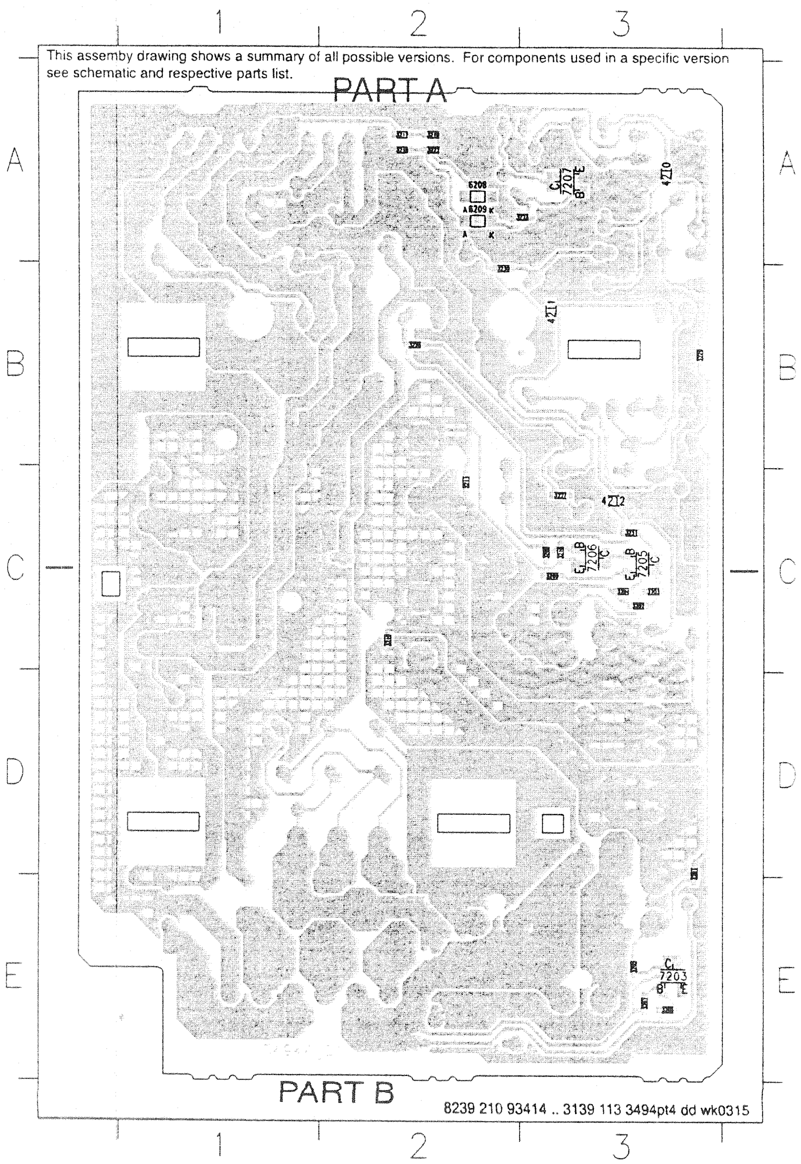

This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

8239 210 93414 .. 3139 113 3494pt4 dd wk0315

1
2
3
A
B
C
D
E
3139_113_34943_01
AV_2003/boards/8329_210_93414_01
IEC T4A L 250V
UL T6.3A L 250V
i6000
1204
1205
1200
1203
T6.3A L 250V
1270
7208 OUT IN
7209 OUT IN

1100	A3
1200	D2
1203	E2
1204	D3
1205	E3
1258	D1
1259	C1
1263	A2
1264	A3
1270	E3
2200	A1
2201	A1
2202	A1
2203	D2
2204	D3
2205	D2
2206	D2
2207	B2
2208	B2
2209	B3
2211	B3
2212	A2
2213	D3
2215	D3
2217	B3
2218	B3
2219	A2
2220	B3
2222	D2
2223	E1
2224	C1
2225	B1
2226	C2
2227	D2
2228	A1
3200	A1
3224	C1
3225	B1
3228	B2
6200	A1
6201	E2
6202	B1
6203	A1
6205	C2
6211	D2
6212	C3
6214	A3
6215	B1
6216	C1
6217	A1
6218	A2
7200	C1
7202	E1
7208	B2
7209	B3
7210	B1
9200	D1
9201	D1
9202	C1
9210	D2
9211	E2
9212	A3
9213	B2
9214	B1
9215	C2
9217	D1

SUPPLY BOARD - CHIP LAYOUT


This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.

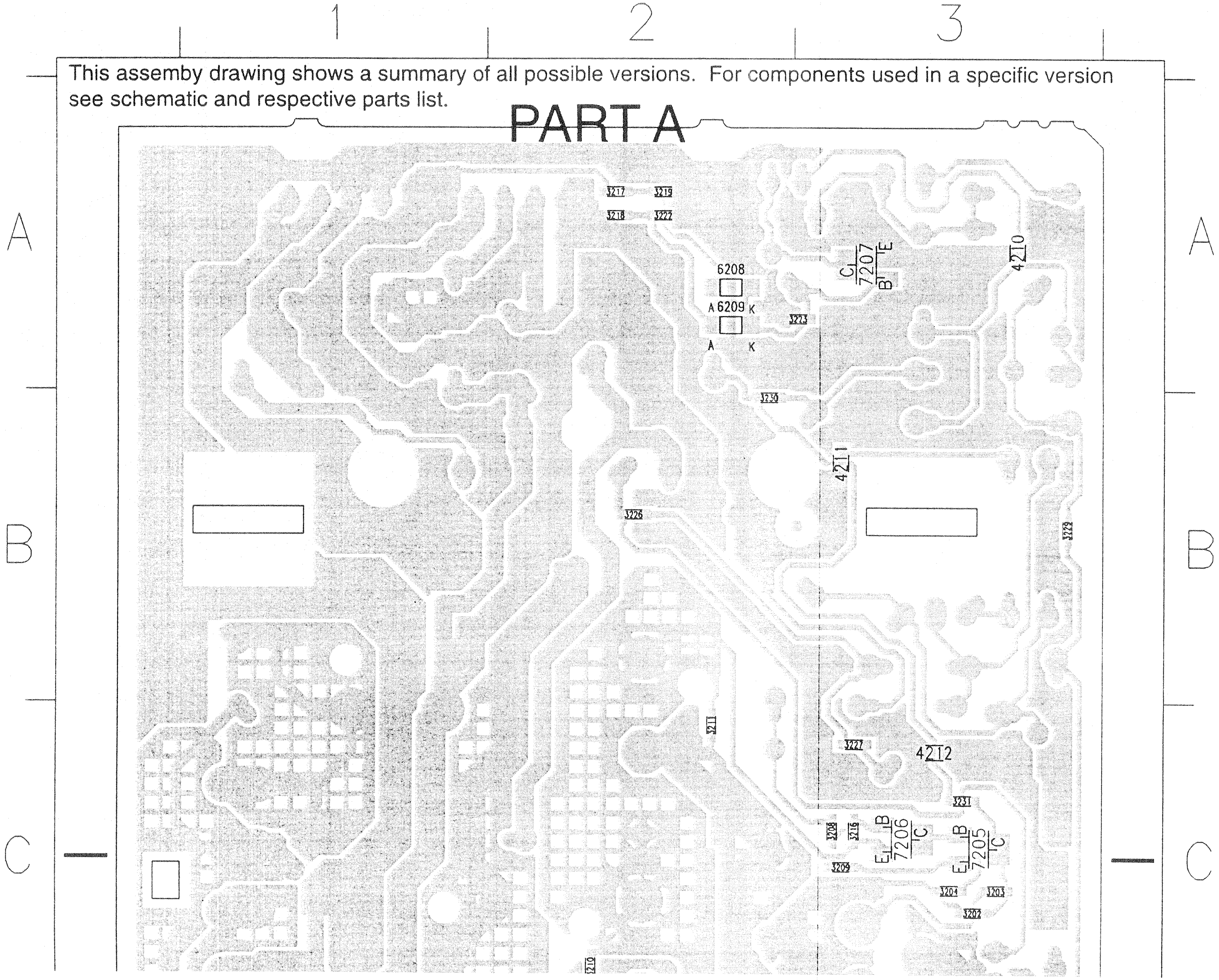
8239 210 93414 .. 3139 113 3494pt4 dd wk0315

PART A
PART B
1
2
3
A
B
C
D
E
7207
7206
7205
7203
4210
4211
4212
6208
6209

3201	D3
3202	C3
3203	C3
3204	C3
3205	E3
3206	E3
3207	E3
3208	C3
3209	C3
3210	C2
3211	C2
3216	C3
3217	A2
3218	A2
3219	A2
3222	A2
3223	A3
3226	B2
3227	C3
3229	B3
3230	B2
3231	C3
4210	A3
4211	B3
4212	C3
6208	A2
6209	A2
7203	E3
7205	C3
7206	C3
7207	A3

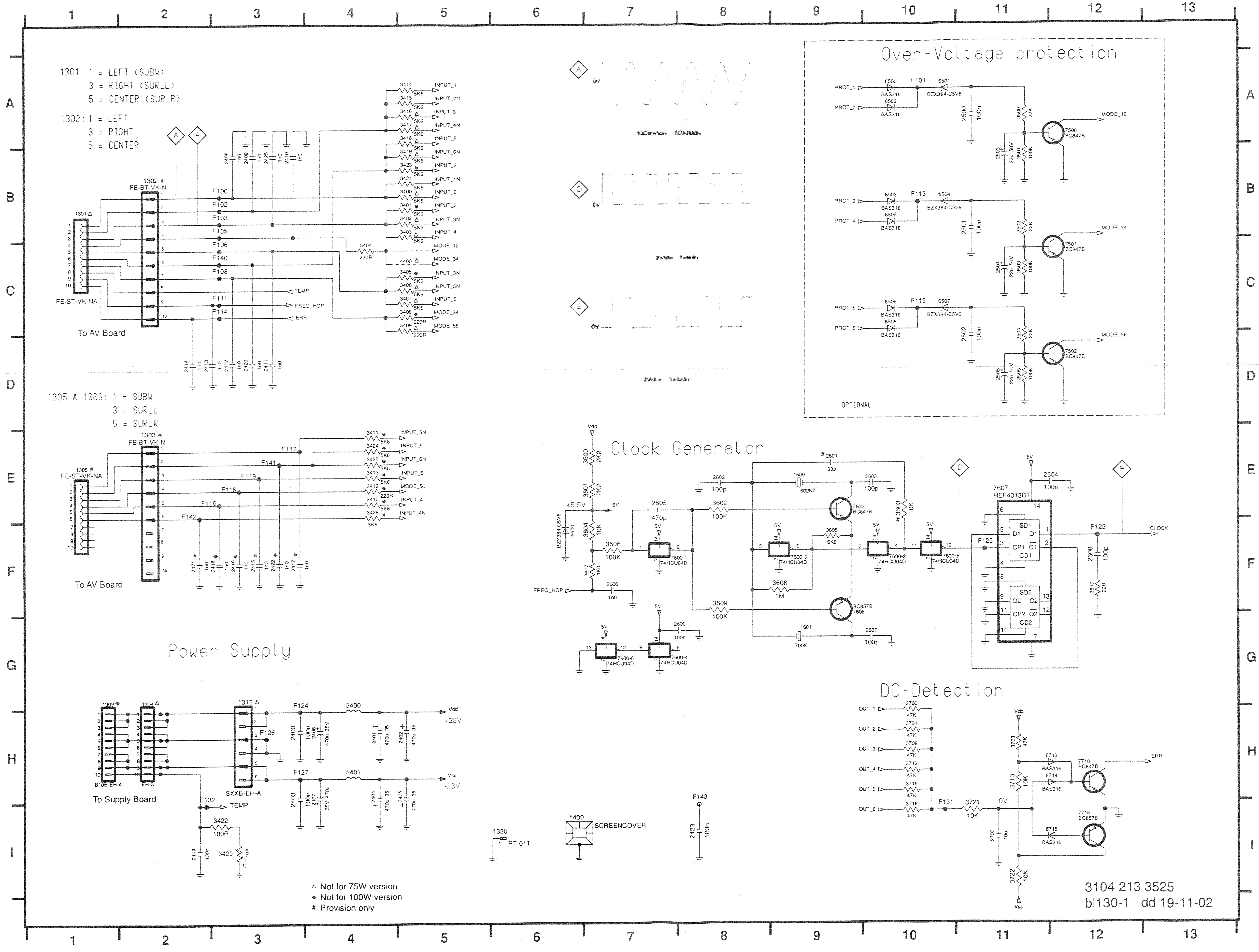
SUPPLY BOARD - CHIP LAYOUT PART A

This assemby drawing shows a summary of all possible versions. For components used in a specific version see schematic and respective parts list.


1
2
3
A
B
C
PART A
3217
3219
3218
3222
6208
A 6209 K
A
K
3223
C
7207
B
E
4210
3230
4211
3226
3229
3211
3227
4212
3231
3208
3216
E
B
7206
C
E
B
7205
C
3209
3204
3203
3202
3210

3201	D3
3202	C3
3203	C3
3204	C3
3205	E3
3206	E3
3207	E3
3208	C3
3209	C3
3210	C2
3211	C2
3216	C3
3217	A2
3218	A2
3219	A2
3222	A2
3223	A3
3226	B2
3227	C3
3229	B3
3230	B2
3231	C3
4210	A3
4211	B3
4212	C3
6208	A2
6209	A2
7203	E3
7205	C3
7206	C3
7207	A3

AMPLIFIER BOARD - CLOCK GENERATOR & CONNECTION CIRCUIT

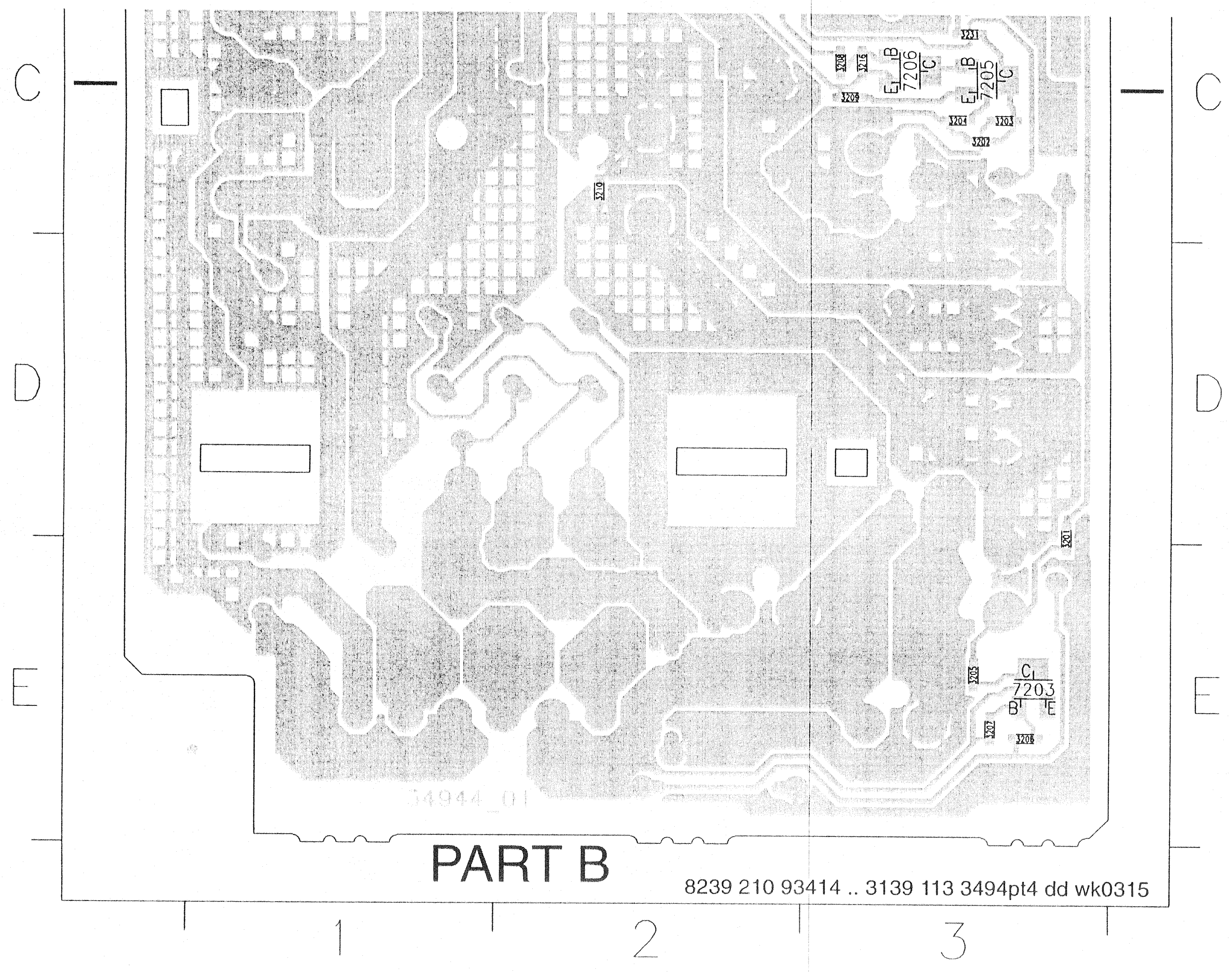

1301: 1 = LEFT (SUBW)
3 = RIGHT (SUR_L)
5 = CENTER (SUR_R)
1302: 1 = LEFT
3 = RIGHT
5 = CENTER
1302 *
FE-BT-VK-N
1301 Δ
FE-ST-VK-NA
To AV Board
1305 & 1303: 1 = SUBW
3 = SUR_L
5 = SUR_R
1303 *
FE-BT-VK-N
1305 #
FE-ST-VK-NA
To AV Board
Power Supply
1309 *
1304 Δ
1312 Δ
B10B-EH-A
EH-S
SXXB-EH-A
To Supply Board
TEMP
Vdd
+28V
Vss
-28V
F124
F126
F127
F132
5400
5401
3422
100R
3420
1320
RT-01T
1400
SCREENCOVER
F143
2423
100n
INPUT_1
INPUT_2N
INPUT_3
INPUT_4N
INPUT_5
INPUT_6N
INPUT_1N
INPUT_2
INPUT_3N
INPUT_4
MODE_12
MODE_34
INPUT_5N
INPUT_6
MODE_56
TEMP
FREQ_HOP
ERR
Over-Voltage protection
PROT_1
PROT_2
PROT_3
PROT_4
PROT_5
PROT_6
BAS316
BZX384-C5V6
BC847B
MODE_12
MODE_34
MODE_56
OPTIONAL
Clock Generator
Vdd
+5.5V
5V
FREQ_HOP
74HCU04D
7602
BC847B
BC857B
7608
7607
HEF4013BT
F123
CLOCK
DC-Detection
OUT_1
OUT_2
OUT_3
OUT_4
OUT_5
OUT_6
F131
3721
10K
0V
6713
6714
6715
BAS316
7710
BC847B
7716
BC857B
ERR

Δ Not for 75W version
* Not for 100W version
# Provision only

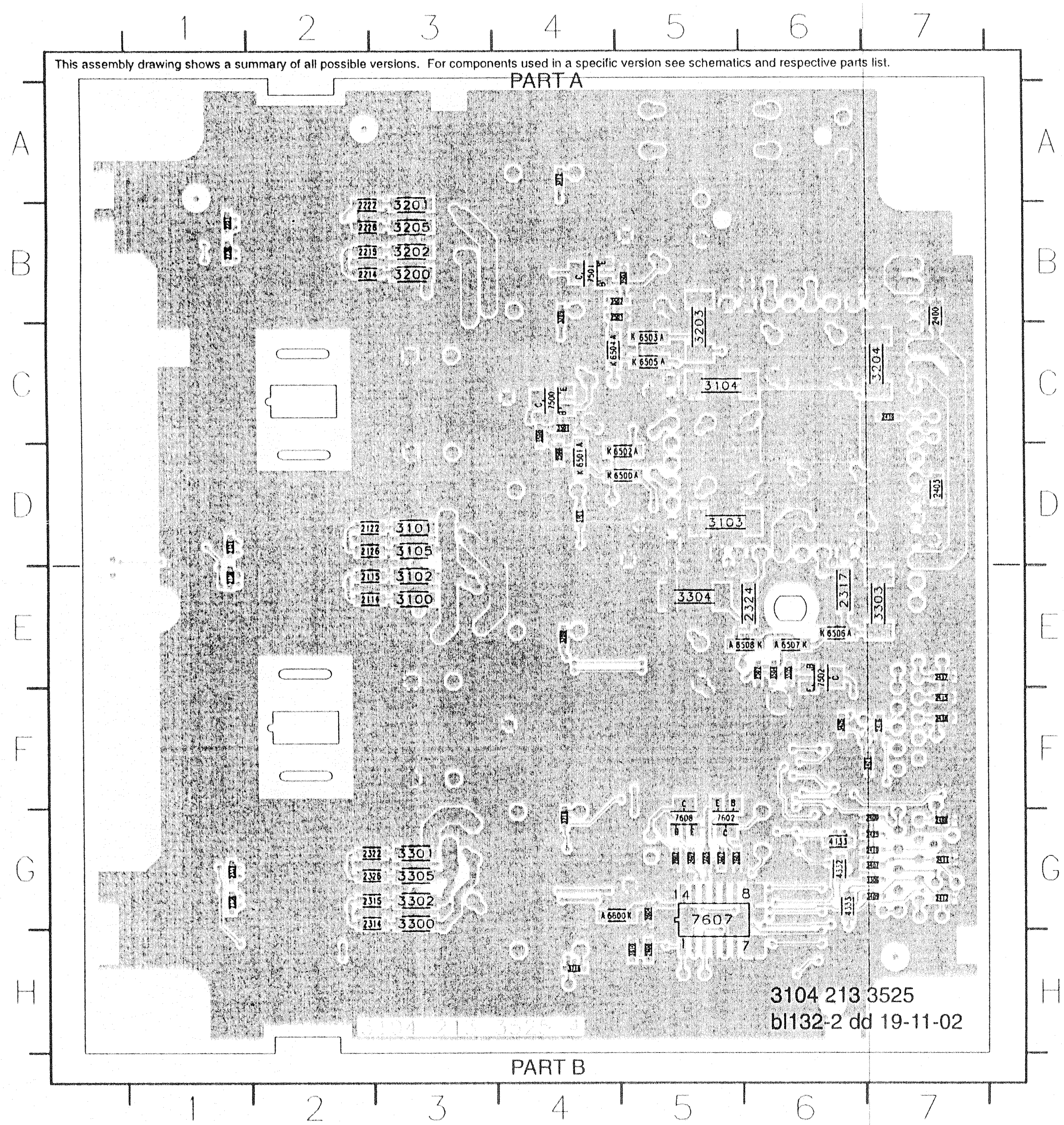
3104 213 3525
bl130-1 dd 19-11-02

1301	B1
1302	B2
1303	E2
1304	G2
1305	E1
1309	G1
1312	G3
1320	I6
1400	I6
1600	E9
1601	G9
2400	H3
2401	H4
2402	H5
2403	H3
2404	H4
2405	H5
2406	H4
2407	H4
2408	B3
2409	B3
2410	B3
2411	D3
2412	D3
2413	D2
2414	D2
2415	F3
2416	F3
2417	F3
2418	F3
2419	I2
2420	D3
2421	F2
2422	F3
2423	I8
2425	B3
2500	A11
2501	B11
2502	D11
2503	B11
2504	C11
2505	D11
2600	G8
2601	E9
2602	E8
2603	E10
2604	E12
2605	E7
2606	F7
2607	G10
2608	F12
2700	I11
3400	B5
3401	B5
3402	B5
3403	B5
3404	C4
3405	C5
3406	C5
3407	C5
3408	C5
3409	C5
3410	E4
3411	E4
3412	E4
3413	E4
3414	A5
3415	A5
3416	A5
3417	A5
3418	A5
3419	B5
3420	I3
3421	B5
3422	I3
3423	B5
3424	E4
3425	E4
3426	E4
3500	A11
3501	B11
3502	B11
3503	C11
3504	D11
3505	D11
3600	E7
3601	E7
3602	E8
3603	E10
3604	F7
3605	F9
3606	F7
3607	F7
3608	F9
3609	F8
3610	F12
3700	G10
3701	H10
3703	H11
3709	H10
3712	H10
3713	H11
3716	H10
3718	I10
3721	I11
3722	I11
4400	C5
5400	G4
5401	H4
6500	A10
6501	A10
6502	A10
6503	B10
6504	B10
6505	B10
6506	C10
6507	C10
6508	C10
6600	F6
6713	H12
6714	H12
6715	I12
7500	A12
7501	C12
7502	D12
7600-1	F8
7600-2	F10
7600-3	F9
7600-4	G8
7600-5	F11
7600-6	G7
7602	E9
7607	E11
7608	F9
7710	H12
7716	I12
F100	B3
F101	A10
F102	B3
F103	B3
F105	B3
F106	C3
F108	C3
F111	C3
F113	B10
F114	C3
F115	C10
F116	E2
F117	E3
F118	E3
F119	E3
F123	F12
F124	G3
F125	F11
F126	H3
F127	H3
F131	I10
F132	H2
F140	C3
F141	E3
F142	E2
F143	H8

SUPPLY BOARD - CHIP LAYOUT PART B


C
D
E
C
D
E
1
2
3
3231
3208
3216
E B 7206 C
E B 7205 C
3209
3204
3203
3202
3210
3201
3205
C 7203 B E
3207
3206
34944_01
PART B
8239 210 93414 .. 3139 113 3494pt4 dd wk0315

AMPLIFIER BOARD - BOTTOM VIEW



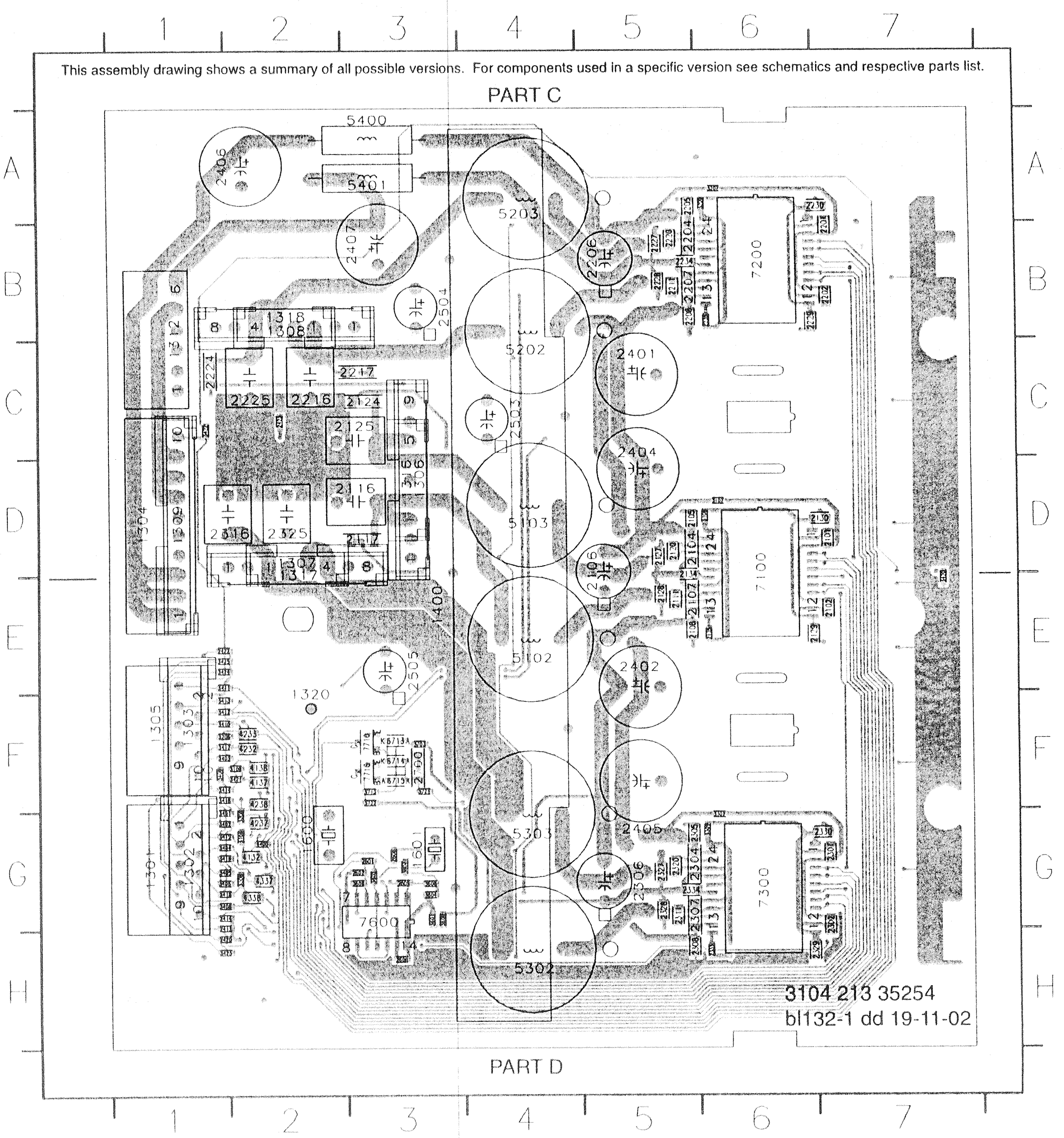
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematics and respective parts list.

PART A
PART B
1 2 3 4 5 6 7
A B C D E F G H
3201
3205
3202
3200
3101
3105
3102
3100
3301
3305
3302
3300
3203
3104
3103
3304
2324
2317
3303
3204
7607
3104 213 3525
bl132-2 dd 19-11-02

2114	E2	3610	H5
2115	E2	3700	E4
2122	D2	3701	D4
2126	D2	3709	B4
2131	D1	3712	A4
2136	E1	3716	H4
2214	B2	3718	G4
2215	B2	4133	G6
2222	B2	4333	G6
2226	B2	6500	D5
2231	B1	6501	D4
2236	B1	6502	D5
2314	G2	6503	C5
2315	G2	6504	C4
2317	E6	6505	C5
2322	G2	6506	E6
2324	E6	6507	E6
2326	G2	6508	E6
2331	G1	6600	G4
2332	G6	7500	C4
2336	G1	7501	B4
2400	B7	7502	E6
2403	D7	7602	G5
2408	G7	7607	G5
2409	G7	7608	G5
2410	G7		
2411	G7		
2412	G7		
2415	F7		
2416	F7		
2417	E7		
2418	F7		
2419	C7		
2421	F7		
2425	G7		
2500	D4		
2501	B5		
2502	E6		
2603	G5		
2604	G5		
2607	G5		
2608	H5		
3100	E3		
3101	D3		
3102	E3		
3103	D5		
3104	C5		
3105	D3		
3200	B3		
3201	B3		
3202	B3		
3203	C5		
3204	C7		
3205	B3		
3300	G3		
3301	G3		
3302	G3		
3303	E7		
3304	E5		
3305	G3		
3306	G7		
3407	G7		
3409	G7		
3426	F6		
3500	C4		
3501	C4		
3502	B5		
3503	B5		
3504	E6		
3505	E6		
3602	G5		
3605	G5		
3609	G5		

AMPLIFIER BOARD - TOP VIEW

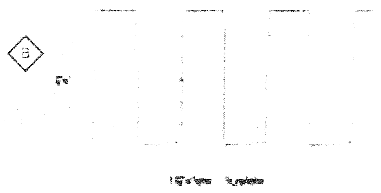
1301	G1	2406	A2	5302	H4
1302	G1	2407	B3	5303	G4
1303	F1	2413	G1	5400	A3
1304	D1	2414	G1	5401	A3
1305	F1	2420	H1	6713	F3
1306	D3	2422	E1	6714	F3
1307	D2	2423	C2	6715	F3
1308	B2	2503	C4	7100	D6
1309	D1	2504	B3	7200	B6
1312	B1	2505	E3	7300	G6
1316	D3	2600	H3	7600	G3
1317	D2	2601	G3	7710	F3
1318	B2	2602	G3	7716	F3
1320	F2	2605	G3		
1400	D4	2606	G3		
1600	G2	2700	F3		
1601	G3	3106	G2		
2101	D7	3107	D6		
2102	E7	3108	F2		
2104	D5	3109	D6		
2105	D5	3206	F1		
2106	D5	3207	A6		
2107	E5	3208	G2		
2108	E5	3209	A6		
2111	E5	3307	G6		
2116	D3	3308	G2		
2117	D3	3309	G6		
2120	D5	3400	F1		
2124	C3	3401	G1		
2125	C3	3402	G1		
2127	D5	3403	F1		
2128	E5	3404	G1		
2129	E6	3405	G1		
2130	D7	3406	G1		
2134	E5	3408	G1		
2135	E6	3410	F1		
2201	B7	3411	E1		
2202	B7	3412	F1		
2204	B5	3413	F1		
2205	A5	3414	F1		
2206	B5	3415	G1		
2207	B5	3416	F1		
2208	B5	3417	F1		
2211	B5	3418	G1		
2216	C2	3419	G1		
2217	C3	3420	E7		
2220	B5	3421	F2		
2224	C1	3422	C1		
2225	C2	3423	H1		
2227	B5	3424	E1		
2228	B5	3425	E1		
2229	B6	3600	G3		
2230	A7	3601	G3		
2234	B5	3603	G3		
2235	B6	3604	G3		
2301	G7	3606	G3		
2302	G7	3607	G3		
2304	G5	3608	G3		
2305	G5	3703	F3		
2306	G5	3713	F3		
2307	G5	3721	F3		
2308	H5	3722	F3		
2311	G5	4132	G2		
2316	D2	4137	F2		
2320	G5	4138	F2		
2325	D2	4232	F2		
2327	G5	4233	F2		
2328	G5	4237	G2		
2329	H6	4238	F2		
2330	G7	4337	G2		
2334	G5	4338	G2		
2335	H6	4400	G2		
2401	C5	5102	E4		
2402	E5	5103	D4		
2404	D5	5202	B4		
2405	F5	5203	A4		

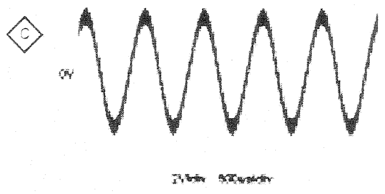


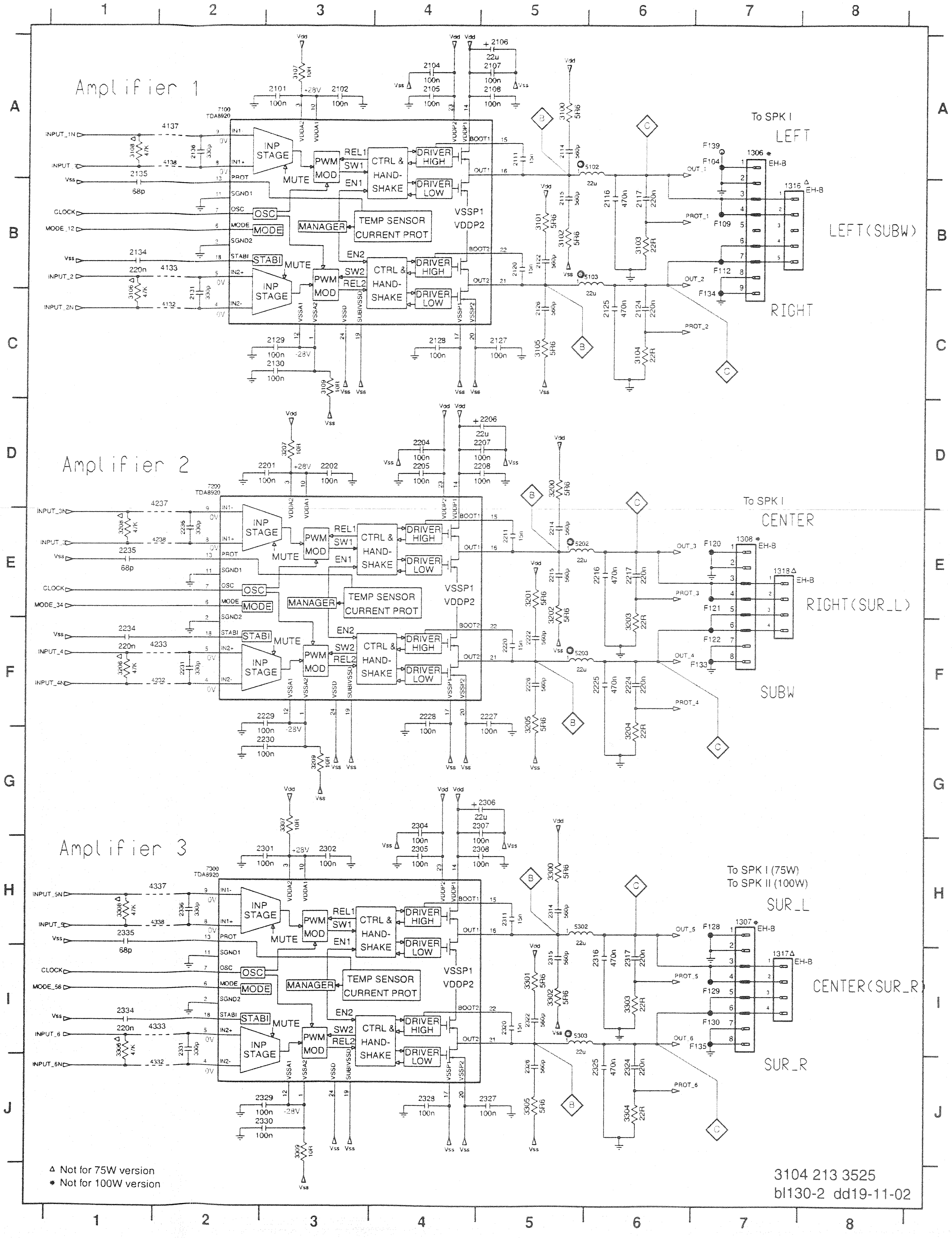
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematics and respective parts list.

PART C
PART D
1 2 3 4 5 6 7
A B C D E F G H
5400
5401
2406
2407
2504
5203
5202
5103
5102
5303
5302
2401
2404
2402
2405
2505
1320
1400
1305
1301
1304
1318
1308
2225
2216
2124
2125
2116
2316
2325
7200
7100
7300
7600
1600
1601
3104 213 35254
bl132-1 dd 19-11-02

AMPLIFIER BOARD - AMPLIFIER CIRCUIT






Amplifier 1
Amplifier 2
Amplifier 3
TDA8920
INP STAGE
PWM MOD
CTRL & HAND-SHAKE
DRIVER HIGH
DRIVER LOW
MUTE
OSC
MODE
STABI
MANAGER
TEMP SENSOR
CURRENT PROT
VSSP1
VDDP2
REL1
SW1
EN1
REL2
SW2
EN2
INPUT_1N
INPUT_1
INPUT_2
INPUT_2N
INPUT_3N
INPUT_3
INPUT_4
INPUT_4N
INPUT_5N
INPUT_5
INPUT_6
INPUT_6N
CLOCK
MODE_12
MODE_34
MODE_56
Vss
Vdd
+28V
-28V
To SPK I
LEFT
LEFT(SUBW)
RIGHT
CENTER
RIGHT(SUR_L)
SUBW
To SPK I (75W)
To SPK II (100W)
SUR_L
CENTER(SUR_R)
SUR_R
EH-B
B
C
1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J

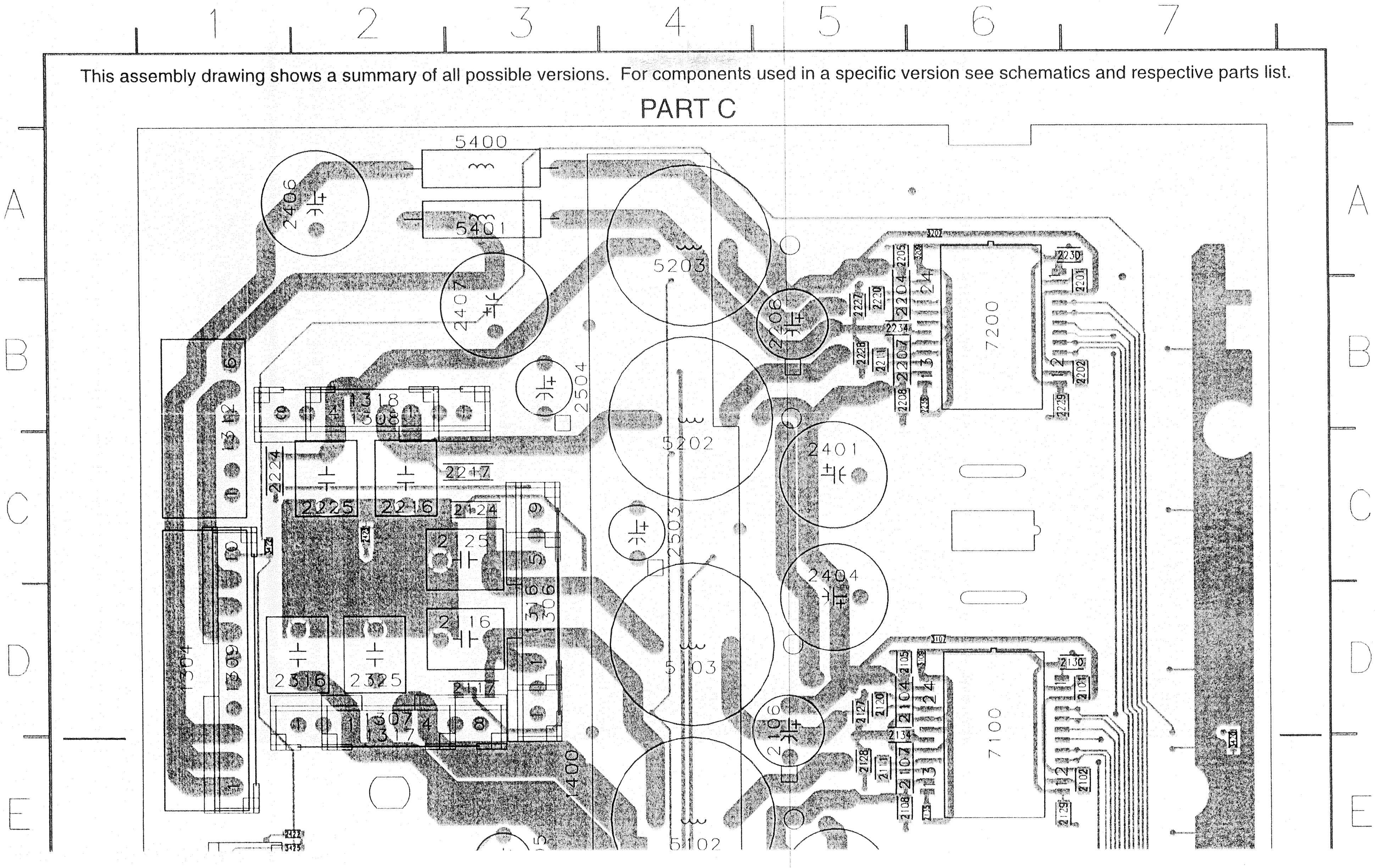
Δ Not for 75W version
• Not for 100W version

3104 213 3525
bl130-2 dd19-11-02

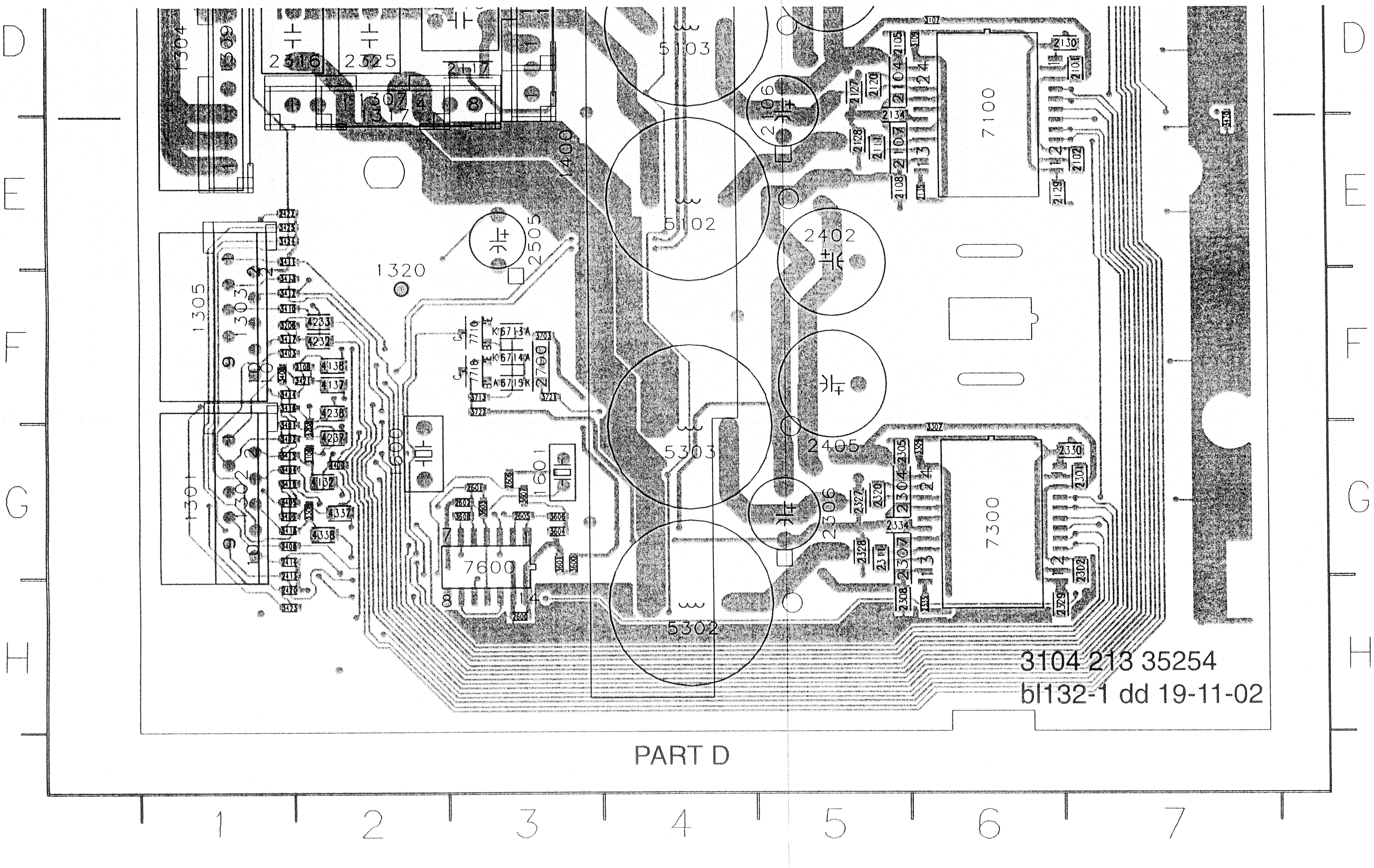
1306	A7
1307	H7
1308	E7
1316	B7
1317	I7
1318	E7
2101	A3
2102	A3
2104	A4
2105	A4
2106	A5
2107	A5
2108	A5
2111	A5
2114	A5
2115	B5
2116	B6
2117	B6
2120	B5
2122	B5
2124	C6
2125	C6
2126	C5
2127	C5
2128	C4
2129	C3
2130	C3
2131	C2
2134	B1
2135	A1
2136	A2
2201	D3
2202	D3
2204	D4
2205	D4
2206	D5
2207	D5
2208	D5
2211	E5
2214	E5
2215	E5
2216	E6
2217	E6
2220	F5
2222	F5
2224	F6
2225	F6
2226	F5
2227	F5
2228	F4
2229	F3
2230	G3
2231	F2
2234	F1
2235	E1
2236	E2
2301	H3
2302	H3
2304	G4
2305	H4
2306	G5
2307	G5
2308	H5
2311	H5
2314	H5
2315	I5
2316	I6
2317	I6
2320	I5
2322	I5
2324	J6
2325	J6
2326	J5
2327	J5
2328	J4
2329	J3
2330	J3
2331	I2
2334	I1
2335	H1
2336	H2
3100	A5
3101	B5
3102	B5
3103	B6
3104	C6
3105	C5
3106	C1
3107	A3
3108	A1
3109	C3
3200	D5
3201	E5
3202	E5
3203	F6
3204	G6
3205	F5
3206	F1
3207	D3
3208	E1
3209	G3
3300	H5
3301	I5
3302	I5
3303	I6
3304	J6
3305	J5
3306	I1
3307	G3
3308	H1
3309	J3
4132	C2
4133	B2
4137	A2
4138	A2
4232	F2
4233	F2
4237	D2
4238	E2
4332	J2
4333	I2
4337	H2
4338	H2
5102	A6
5103	B6
5202	E5
5203	F5
5302	H5
5303	I5
7100	A2
7200	D2
7300	H2
F104	A7
F109	B7
F112	B7
F120	E7
F121	E7
F122	F7
F128	H7
F129	I7
F130	I7
F133	F7
F134	C7
F135	I7
F139	A7

AMPLIFIER BOARD - TOP VIEW PART C

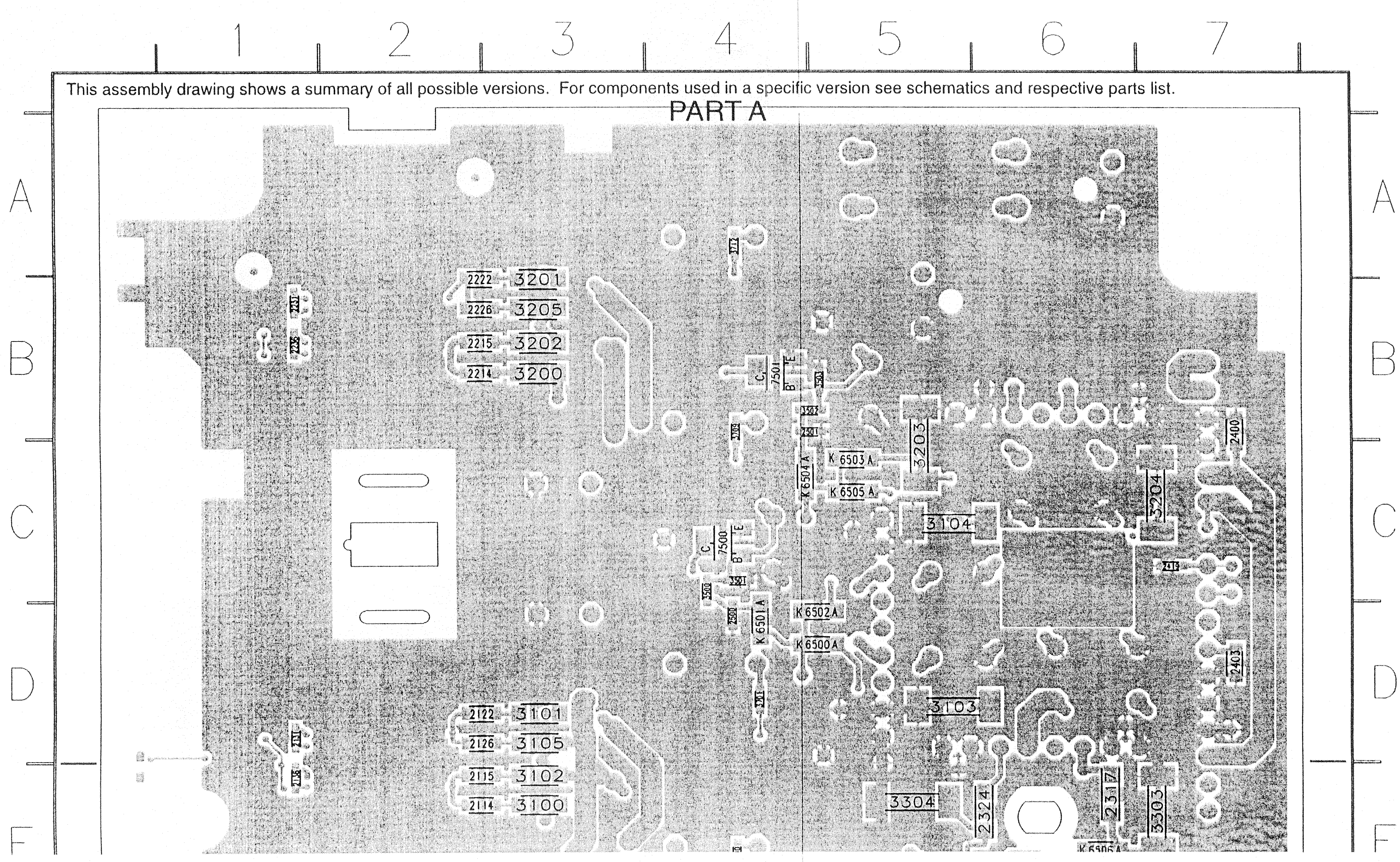
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematics and respective parts list.


PART C
1
2
3
4
5
6
7
A
B
C
D
E
5400
5401
2406
2407
5203
2504
2206
7200
5202
2401
2503
2404
5103
2106
7100
5102
1400
1304
2224
2225
2216
2247
2124
2125
2116
2117
2516
2325
1308
1318
1306
1316
1307
1317
2204
2207
2104
2107
2102
2202
2130
2230
2129
2229

AMPLIFIER BOARD - TOP VIEW PART D

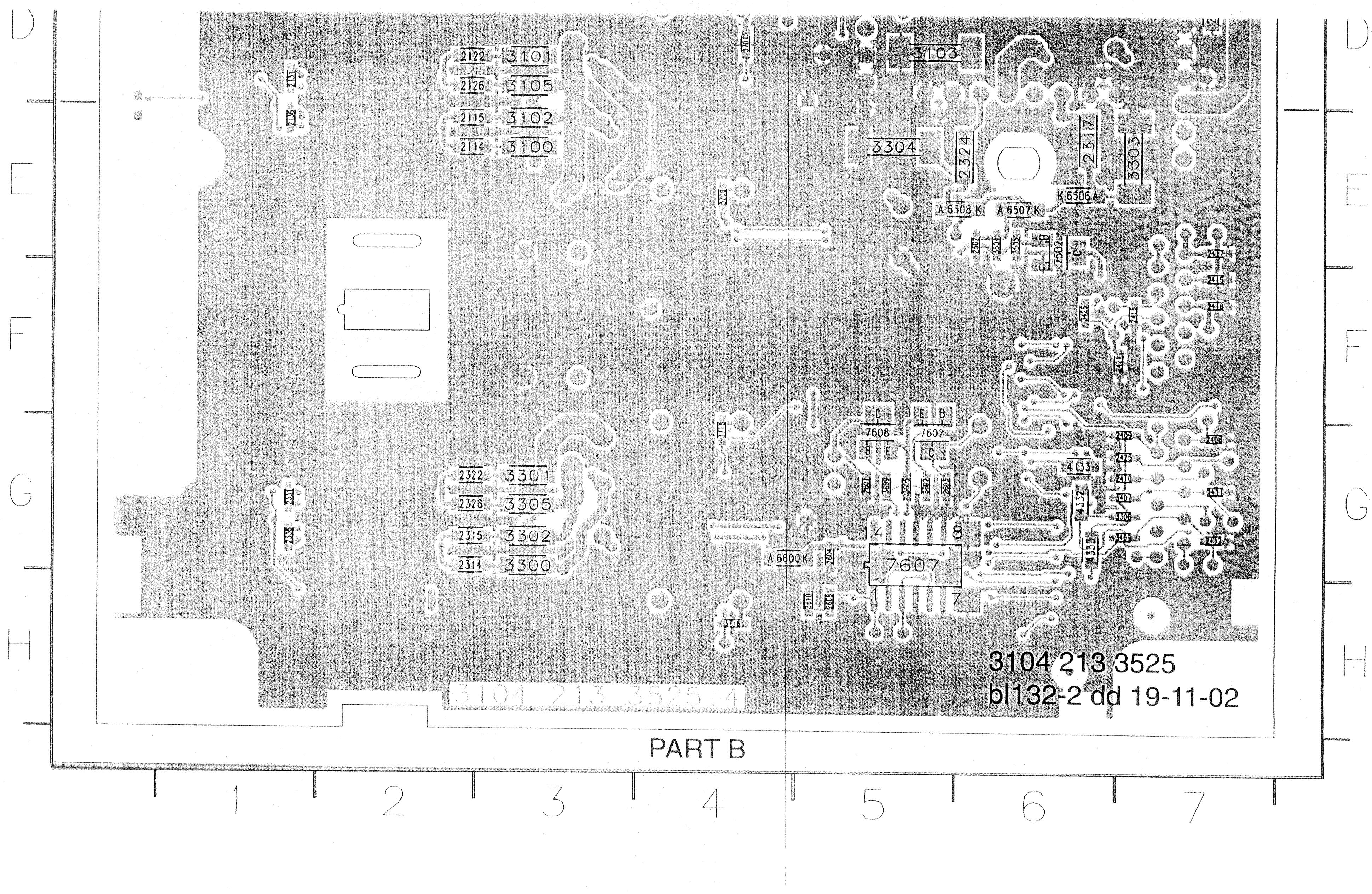

PART D
3104 213 35254
bl132-1 dd 19-11-02
1
2
3
4
5
6
7
D
E
F
G
H
1304
2516
2325
2117
1307
1400
5103
5102
2106
7100
2402
2505
1320
1305
1303
1301
1302
7710
7718
2700
1600
1601
7600
5303
5302
2405
2306
7300
2304
2307
2302
2330

AMPLIFIER BOARD - BOTTOM VIEW PART A


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematics and respective parts list.

PART A
1
2
3
4
5
6
7
A
B
C
D
E
2222
3201
2226
3205
2215
3202
2214
3200
2122
3101
2126
3105
2115
3102
2114
3100
7501
7500
K 6504 A
K 6503 A
K 6505 A
K 6501 A
K 6502 A
K 6500 A
3203
3204
3104
3103
3304
2324
2317
3303
2400
2403
K 6506 A

AMPLIFIER BOARD - BOTTOM VIEW PART B


D
E
F
G
H
1
2
3
4
5
6
7
2122
3101
2126
3105
2115
3102
2114
3100
3103
3304
2324
2317
3303
A 6508 K
A 6507 K
K 6506 A
7502
7608
7602
2322
3301
2326
3305
2315
3302
2314
3300
A 6600 K
7607
4133
4132
3104 213 3525 4
3104 213 3525
bl132-2 dd 19-11-02
PART B

ELECTRICAL PARTS LIST - AMPLIFIER BOARD

MISCELLANEOUS

8	3104 211 29861	Spring, IC	
10	3104 211 02881	Earth Spring	
1301	4822 265 11208	Flex Conn. 10P	not for 75W
1302	4822 267 10729	Flex Conn. 10P	not for 100W
1303	4822 267 10729	Flex Conn. 10P	not for 100W
1600	2422 540 98514	Ceram Resonator 602,7kHz	
1601	2422 540 98568	Ceram Resonator 700kHz	

CAPACITORS

2101	2222 580 15649	100nF 10% 50V	
2102	2222 580 15649	100nF 10% 50V	
2104	2222 601 55649	100nF 10% 100V	
2105	2222 580 15649	100nF 10% 50V	
2106	2020 021 91431	22uF 20% 100V	
2107	2222 601 55649	100nF 10% 100V	
2108	2222 580 15649	100nF 10% 50V	
2111	4822 126 13188	15nF 5% 63V	
2114	5322 116 80853	560pF 5% 63V	
2115	5322 116 80853	560pF 5% 63V	
2116	4822 121 51252	470nF 5% 63V	
2117	2222 581 15654	220nF 10% 50V	
2120	4822 126 13188	15nF 5% 63V	
2122	5322 116 80853	560pF 5% 63V	
2124	2222 581 15654	220nF 10% 50V	
2125	4822 121 51252	470nF 5% 63V	
2126	5322 116 80853	560pF 5% 63V	
2127	2222 580 15649	100nF 10% 50V	
2128	2222 580 15649	100nF 10% 50V	
2129	2222 580 15649	100nF 10% 50V	
2130	2222 580 15649	100nF 10% 50V	
2131	4822 126 14241	330pF 50V	
2134	2238 780 55654	220nF 10% 16V	
2135	4822 126 13956	68pF 5% 63V	
2136	4822 126 14241	330pF 50V	
2201	2222 580 15649	100nF 10% 50V	
2202	2222 580 15649	100nF 10% 50V	
2204	2222 601 55649	100nF 10% 100V	
2205	2222 580 15649	100nF 10% 50V	
2206	2020 021 91431	22uF 20% 100V	
2207	2222 601 55649	100nF 10% 100V	
2208	2222 580 15649	100nF 10% 50V	
2211	4822 126 13188	15nF 5% 63V	
2214	5322 116 80853	560pF 5% 63V	
2215	5322 116 80853	560pF 5% 63V	
2216	4822 121 51252	470nF 5% 63V	
2217	2222 581 15654	220nF 10% 50V	
2220	4822 126 13188	15nF 5% 63V	
2222	5322 116 80853	560pF 5% 63V	
2224	2222 581 15654	220nF 10% 50V	
2225	4822 121 51252	470nF 5% 63V	
2226	5322 116 80853	560pF 5% 63V	
2227	2222 580 15649	100nF 10% 50V	
2228	2222 580 15649	100nF 10% 50V	
2229	2222 580 15649	100nF 10% 50V	
2230	2222 580 15649	100nF 10% 50V	
2231	4822 126 14241	330pF 50V	
2234	2238 780 55654	220nF 10% 16V	
2235	4822 126 13956	68pF 5% 63V	
2236	4822 126 14241	330pF 50V	
2301	2222 580 15649	100nF 10% 50V	
2302	2222 580 15649	100nF 10% 50V	
2304	2222 601 55649	100nF 10% 100V	
2305	2222 580 15649	100nF 10% 50V	
2306	2020 021 91431	22uF 20% 100V	
2307	2222 601 55649	100nF 10% 100V	
2308	2222 580 15649	100nF 10% 50V	
2311	4822 126 13188	15nF 5% 63V	
2314	5322 116 80853	560pF 5% 63V	
2315	5322 116 80853	560pF 5% 63V	
2316	4822 121 51252	470nF 5% 63V	
2317	2222 581 15654	220nF 10% 50V	
2320	4822 126 13188	15nF 5% 63V	
2322	5322 116 80853	560pF 5% 63V	
2324	2222 581 15654	220nF 10% 50V	
2325	4822 121 51252	470nF 5% 63V	
2326	5322 116 80853	560pF 5% 63V	
2327	2222 580 15649	100nF 10% 50V	
2328	2222 580 15649	100nF 10% 50V	
2329	2222 580 15649	100nF 10% 50V	
2330	2222 580 15649	100nF 10% 50V	
2331	4822 126 14241	330pF 50V	
2334	2238 780 55654	220nF 10% 16V	
2335	4822 126 13956	68pF 5% 63V	
2336	4822 126 14241	330pF 50V	
2400	2222 580 15649	100nF 10% 50V	
2401	4822 124 80062	470uF 20% 35V	
2402	4822 124 80062	470uF 20% 35V	
2403	2222 580 15649	100nF 10% 50V	
2404	4822 124 80062	470uF 20% 35V	
2405	4822 124 80062	470uF 20% 35V	
2406	4822 123 14026	470uF 20% 35V	
2407	4822 123 14026	470uF 20% 35V	
2408	5322 126 11578	1nF 10% 50V	
2409	5322 126 11578	1nF 10% 50V	
2410	5322 126 11578	1nF 10% 50V	
2411	5322 126 11578	1nF 10% 50V	
2412	5322 126 11578	1nF 10% 50V	
2413	5322 126 11578	1nF 10% 50V	
2414	5322 126 11578	1nF 10% 50V	
2415	5322 126 11578	1nF 10% 50V	not for 100W
2416	5322 126 11578	1nF 10% 50V	not for 100W
2417	5322 126 11578	1nF 10% 50V	not for 100W
2418	5322 126 11578	1nF 10% 50V	not for 100W
2419	2238 586 59812	100nF 50V	

ELECTRICAL PARTS LIST - AMPLIFIER BOARD

2420	5322 126 11578	1nF 10% 50V	
2421	5322 126 11578	1nF 10% 50V	not for 100W
2422	5322 126 11578	1nF 10% 50V	not for 100W
2423	2238 586 59812	100nF 50V	
2425	5322 126 11578	1nF 10% 50V	
2600	2238 586 59812	100nF 50V	
2602	2020 552 94427	100pF 5% 50V	
2603	2020 552 94427	100pF 5% 50V	
2604	2238 586 59812	100nF 50V	
2605	4822 126 13881	470pF 5% 50V	
2606	5322 126 11578	1nF 10% 50V	
2607	2020 552 94427	100pF 5% 50V	
2608	2020 552 94427	100pF 5% 50V	
2700	2020 552 96507	10uF +80/-20% 10V	

RESISTORS

3100	4822 051 10568	5R6 5% 0,25W	
3101	4822 051 10568	5R6 5% 0,25W	
3102	4822 051 10568	5R6 5% 0,25W	
3103	2322 762 60229	22R 5% PRC221	
3104	2322 762 60229	22R 5% PRC221	
3105	4822 051 10568	5R6 5% 0,25W	
3106	4822 117 12925	47k 1% 0,062W	not for 75W
3107	4822 051 30109	10R 5% 0,062W	
3108	4822 117 12925	47k 1% 0,062W	not for 75W
3109	4822 051 30109	10R 5% 0,062W	
3200	4822 051 10568	5R6 5% 0,25W	
3201	4822 051 10568	5R6 5% 0,25W	
3202	4822 051 10568	5R6 5% 0,25W	
3203	2322 762 60229	22R 5% PRC221	
3204	2322 762 60229	22R 5% PRC221	
3205	4822 051 10568	5R6 5% 0,25W	
3206	4822 117 12925	47k 1% 0,062W	not for 75W
3207	4822 051 30109	10R 5% 0,062W	
3208	4822 117 12925	47k 1% 0,062W	not for 75W
3209	4822 051 30109	10R 5% 0,062W	
3300	4822 051 10568	5R6 5% 0,25W	
3301	4822 051 10568	5R6 5% 0,25W	
3302	4822 051 10568	5R6 5% 0,25W	
3303	2322 762 60229	22R 5% PRC221	
3304	2322 762 60229	22R 5% PRC221	
3305	4822 051 10568	5R6 5% 0,25W	
3306	4822 117 12925	47k 1% 0,062W	not for 75W
3307	4822 051 30109	10R 5% 0,062W	
3308	4822 117 12925	47k 1% 0,062W	not for 75W
3309	4822 051 30109	10R 5% 0,062W	
3400	4822 051 30562	5k6 5% 0,063W	not for 75W
3401	4822 051 30562	5k6 5% 0,063W	not for 100W
3402	4822 051 30562	5k6 5% 0,063W	not for 75W
3403	4822 051 30562	5k6 5% 0,063W	not for 75W
3404	4822 051 30221	220R 5% 0,062W	
3405	4822 051 30562	5k6 5% 0,063W	not for 100W
3406	4822 051 30562	5k6 5% 0,063W	not for 75W
3407	4822 051 30562	5k6 5% 0,063W	not for 75W
3408	4822 051 30221	220R 5% 0,062W	not for 100W
3409	4822 051 30221	220R 5% 0,062W	not for 75W
3410	4822 051 30562	5k6 5% 0,063W	not for 100W
3411	4822 051 30562	5k6 5% 0,063W	not for 100W
3412	4822 051 30221	220R 5% 0,062W	not for 100W
3413	4822 051 30562	5k6 5% 0,063W	not for 100W
3414	4822 051 30562	5k6 5% 0,063W	
3415	4822 051 30562	5k6 5% 0,063W	
3416	4822 051 30562	5k6 5% 0,063W	not for 75W
3417	4822 051 30562	5k6 5% 0,063W	not for 75W
3418	4822 051 30562	5k6 5% 0,063W	not for 75W
3419	4822 051 30562	5k6 5% 0,063W	not for 75W
3420	2322 615 23103	NTC 10k 5% 0,125W	
3421	4822 051 30562	5k6 5% 0,063W	
3422	4822 051 30101	100R 5% 0,062W	
3423	4822 051 30562	5k6 5% 0,063W	not for 100W
3424	4822 051 30562	5k6 5% 0,063W	not for 100W
3425	4822 051 30562	5k6 5% 0,063W	not for 100W
3426	4822 051 30562	5k6 5% 0,063W	not for 100W
3600	4822 051 30222	2k2 5% 0,062W	
3601	4822 051 30222	2k2 5% 0,062W	
3602	4822 117 13632	100k 1% 0.062W	
3604	4822 051 30103	10k 5% 0,062W	
3605	4822 051 30682	6k8 5% 0,062W	
3606	4822 117 13632	100k 1% 0,062W	
3607	4822 051 30102	1k 5% 0,062W	
3608	4822 051 30105	1M 5% 0,062W	
3609	4822 117 13632	100k 1% 0,062W	
3610	4822 117 12139	22R 5% 0,062W	
3700	4822 117 12925	47k 1% 0.063W	
3701	4822 117 12925	47k 1% 0.063W	
3703	4822 117 12925	47k 1% 0.063W	
3709	4822 117 12925	47k 1% 0.063W	
3712	4822 117 12925	47k 1% 0.063W	
3713	4822 051 30103	10k 5% 0,062W	
3716	4822 117 12925	47k 1% 0.063W	
3718	4822 117 12925	47k 1% 0.063W	
3721	4822 051 30103	10k 5% 0,062W	
3722	4822 051 30103	10k 5% 0,062W	
4132	4822 051 20008	0R JUMPER 0805	
4133	4822 051 20008	0R JUMPER 0805	
4137	4822 051 20008	0R JUMPER 0805	
4138	4822 051 20008	0R JUMPER 0805	
4232	4822 051 20008	0R JUMPER 0805	
4233	4822 051 20008	0R JUMPER 0805	
4237	4822 051 20008	0R JUMPER 0805	
4238	4822 051 20008	0R JUMPER 0805	
4332	4822 051 20008	0R JUMPER 0805	
4333	4822 051 20008	0R JUMPER 0805	
4337	4822 051 20008	0R JUMPER 0805	

ELECTRICAL PARTS LIST - MAINS & ECO STBY, SUPPLY, SPEAKER (SPK I) & SW-OUT (SPK II) BOARDS

MISCELLANEOUS

	4822 492 11735		Spring, Transistor	
1200	4822 071 55002	⚠	Fuse T5A 250V	75W
1200	4822 252 51123	⚠	Fuse T6,3A 250V	100W
1203	4822 071 55002	⚠	Fuse T5A 250V	75W
1203	4822 252 51123	⚠	Fuse T6,3A 250V	100W
1204	9965 000 07786	⚠	Fuse T4A 250V	
1205	9965 000 07786	⚠	Fuse T4A 250V	
1263	4822 267 10733		Flex Socket 4P Vert,	
1270	2422 025 14044		Connector 6P	
1303	2422 015 19885		Speaker Socket 12P	Single SW
1304	2422 015 19887		Speaker Socket 10P	Twin SW
1305	2422 015 19886		Speaker Socket 4P	Twin SW
1901	4822 265 31015	⚠	Mains Socket 2A5 250V	/21R/21S/22S/25S
1901	2422 030 00328	⚠	Mains Socket 7A 125V	/37R
1905	4822 071 53152	⚠	Fuse T3.15A 250V	MX5500D/21S
1905	9965 000 07788	⚠	Fuse T2A 250V	MX5700D/22S/25S
1905	9965 000 07786	⚠	Fuse T4A 250V	MX5700D/21R/21S
1905	4822 253 10126	⚠	Fuse T4A 250V	/37
1907	4822 265 20723		Connector 2P	
1908	4822 267 10958		Flex Socket 5P Hort,	
1909	4822 267 10728		Connector 4P	/21R/21S
1910	2422 132 07519	⚠	RELAY 1P 12V 16A OZ-SS L	
1911	9965 000 07789	⚠	Voltage Selector	/21R/21S
1912	9965 000 07788	⚠	Fuse T2A 250V	/21R/21S

CAPACITORS

2000	5322 126 11583		10nF 10% 50V	
2001	5322 126 11583		10nF 10% 50V	
2002	5322 126 11583		10nF 10% 50V	
2003	5322 126 11583		10nF 10% 50V	
2004	5322 126 11583		10nF 10% 50V	
2005	5322 126 11583		10nF 10% 50V	
2006	5322 126 11583		10nF 10% 50V	
2007	5322 126 11583		10nF 10% 50V	
2008	5322 126 11583		10nF 10% 50V	
2009	5322 126 11583		10nF 10% 50V	
2010	5322 126 11583		10nF 10% 50V	
2011	5322 126 11583		10nF 10% 50V	
2019	5322 126 11583		10nF 10% 50V	Twin SW
2020	5322 126 11583		10nF 10% 50V	Twin SW
2021	5322 126 11583		10nF 10% 50V	Twin SW
2022	5322 126 11583		10nF 10% 50V	Twin SW
2200	4822 126 12785		47nF 50V	
2201	5322 124 40641		10uF 20% 100V	
2202	4822 124 80231		47uF 20% 16V	
2203	5322 121 42578		100nF 5% 250V	
2204	5322 121 42578		100nF 5% 250V	
2205	5322 121 42578		100nF 5% 250V	
2206	4822 124 80563		4700uF 20% 35V	
2207	4822 124 80563		4700uF 20% 35V	
2208	5322 121 42661		330nF 5% 63V	
2209	5322 121 42578		100nF 5% 250V	
2211	4822 124 80563		4700uF 20% 35V	
2212	5322 121 42386		100nF 5% 63V	
2213	5322 121 42578		100nF 5% 250V	
2215	2020 012 93745		10mF 20% 16V	
2217	2020 561 90365		100nF +80/-20% 50V	
2218	4822 124 11947		10uF 20% 16V	
2219	4822 124 81286		47uF 20% 16V	
2220	4822 124 81286		47uF 20% 16V	
2222	4822 124 12056		1000uF 20% 35V	
2223	4822 124 12056		1000uF 20% 35V	
2224	4822 124 41643		100uF 20% 16V	
2225	4822 124 41643		100uF 20% 16V	
2901	2238 586 59812		100nF +80/-20% 50V	
2902	4822 121 43526		47nF 5% 250V	
2903	3198 017 34730		47nF 16V	
2904	2238 586 59812		100nF +80/-20% 50V	
2905	5322 126 11583		10nF 10% 50V	
2906	2222 336 19106		22nF 20% 275V	
2907	4822 124 40255		100uF 20% 63V	
2908	4822 121 10512		220nF 20% 275V	/22S/25S
2909	5322 126 11583		10nF 10% 50V	
2910	2238 586 59812		100nF +80/-20% 50V	/22S/25S
2911	4822 124 41584		100uF 20% 10V	
2912	4822 124 40207		100uF 20% 25V	
2913	2222 338 22474		470nF 20% 275V	/21R/21S/37
2914	4822 126 13193		4,7nF 10% 63V	
2915	2020 554 90173	⚠	2,2nF 20% 250V	

RESISTORS

3200	4822 116 52283		4k7 5% 0,5W	
3201	4822 051 30272		2k7 5% 0,062W	
3202	4822 051 30103		10k 5% 0,062W	
3203	4822 051 30103		10k 5% 0,062W	
3204	4822 117 12925		47k 1% 0,063W	
3205	4822 051 30103		10k 5% 0,062W	
3206	4822 051 30681		680R 5% 0,062W	
3207	4822 051 30331		330R 5% 0,062W	
3208	4822 051 30681		680R 5% 0,062W	
3209	4822 051 30472		4k7 5% 0,062W	
3216	4822 051 30331		330R 5% 0,062W	
3217	4822 051 30682		6k8 5% 0,062W	
3218	4822 051 30153		15k 5% 0,062W	
3219	4822 051 30102		1k 5% 0,062W	
3222	4822 051 30102		1k 5% 0,062W	
3223	4822 117 13632		100k 1% 0,62W	
3224	4822 116 83872		220R 5% 0,5W	
3225	4822 052 10828		8R2 5% 0,33W	
3226	4822 051 30471		470R 5% 0,062W	
3227	4822 051 30102		1k 5% 0,062W	
3229	4822 051 30472		4k7 5% 0,062W	
3901	4822 053 21106	⚠	10M 5% 0,5W	/37
3902	4822 051 30103		10k 5% 0,062W	

3903	4822 051 30475		4M7 5% 0,062W	
3904	4822 051 30331		330R 5% 0,062W	
3905	4822 051 30681		680R 5% 0,062W	
3906	4822 117 13632		100k 1% 0,62W	
3907	4822 051 30333		33k 5% 0,062W	
3908	4822 051 30105		1M 5% 0,062W	
3909	4822 051 30471		470R 5% 0,062W	
3910	4822 051 30222		2k2 5% 0,062W	
3911	4822 117 13632		100k 1% 0,62W	
3913	4822 117 12925		47k 1% 0,063W	
3914	4822 117 12925		47k 1% 0,063W	
3915	4822 053 21106		10M 5% 0,5W	
3916	4822 051 30334		330k 5% 0,062W	
3917	4822 116 52175		100R 5% 0,5W	
3918	4822 116 52175		100R 5% 0,5W	
3919	4822 051 30152		1k5 5% 0,062W	
3920	4822 051 30472		4k7 5% 0,062W	
4210	4822 051 30008		0R Jumper 0603	
4211	4822 051 30008		0R Jumper 0603	
4212	4822 051 30008		0R Jumper 0603	

COILS & FILTERS

5901	4822 157 11832	⚠	Mains Filter 400uH 3A
5902	4822 157 53473		Coil 1000uH 10%
5903	4822 157 53473		Coil 1000uH 10%
5904	4822 157 11228		Coil 100uH 5%
5905	2422 549 45157		Standby Transformer

DIODES

6200	4822 130 30621	1N4148
6201	3198 010 52790	BZX79-B27
6202	4822 130 31878	1N4003G
6203	4822 130 34382	BZX79-B8V2
6205	3198 010 52790	BZX79-B27
6208	4822 130 11397	BAS316
6209	4822 130 11397	BAS316
6211	4822 130 11139	GBU8D
6212	3198 010 10640	GBU4K
6214	4822 130 30621	1N4148
6215	4822 130 34174	BZX79-B4V7
6216	4822 130 34145	BZX79-B39
6901	4822 130 31878	1N4003G
6902	4822 130 31878	1N4003G
6903	4822 130 11397	BAS316
6904	4822 130 11397	BAS316
6905	4822 130 11397	BAS316
6906	4822 130 31878	1N4003G
6907	4822 130 11397	BAS316
6908	4822 130 30621	1N4148
6909	4822 130 11397	BAS316
6910	4822 130 11397	BAS316
6911	4822 130 11397	BAS316
6912	4822 130 31878	1N4003G
6914	4822 130 11397	BAS316
6915	4822 130 34173	BZX79-C5V6
6916	4822 130 31878	1N4003G
6917	4822 130 34145	BZX79-B39
6918	4822 130 11397	BAS316
6919	4822 130 11397	BAS316
6920	4822 130 11397	BAS316
6921	4822 130 11397	BAS316

TRANSISTORS & INTEGRATED CIRCUITS

7200	9340 561 95127	BUK7535-55A
7202	9340 561 95127	BUK7535-55A
7203	5322 130 60159	BC847B
7205	4822 130 60373	BC857B
7206	4822 130 60373	BC857B
7207	5322 130 60159	BC847B
7208	4822 209 33575	L7812CP
7209	4822 209 12335	L4941
7210	4822 130 41246	BC327-25
7901	4822 130 60373	BC857B
7902	4822 130 40855	BC337-40
7904	4822 130 42615	BC817-40
7905	4822 130 41327	BC327-40
7906	4822 130 42804	BC817-25

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS LIST - AMPLIFIER BOARD

RESISTORS

4338	4822 051 20008	0R JUMPER 0805	
4400	4822 051 30008	0R JUMPER 0603	not for 75W

COILS & FILTERS

5102	2422 536 00496	IND. FXD. 22uH 10%
5103	2422 536 00496	IND. FXD. 22uH 10%
5202	2422 536 00496	IND. FXD. 22uH 10%
5203	2422 536 00496	IND. FXD. 22uH 10%
5302	2422 536 00496	IND. FXD. 22uH 10%
5303	2422 536 00496	IND. FXD. 22uH 10%
5400	4822 157 11411	FXD. IND. BEAD 100MHZ 80R
5401	4822 157 11411	FXD. IND. BEAD 100MHZ 80R

DIODES

6600	3198 020 55680	BZX384-C5V6
6713	4822 130 11397	BAS316
6714	4822 130 11397	BAS316
6715	4822 130 11397	BAS316

TRANSISTORS & INTEGRATED CIRCUITS

7100	9352 705 74518	TDA8920TH/N1R
7200	9352 705 74518	TDA8920TH/N1R
7300	9352 705 74518	TDA8920TH/N1R
7600	5322 209 11517	PC74HCU04T
7602	5322 130 60159	BC847B
7607	5322 209 14477	HEF4013BT
7608	4822 130 60373	BC857B
7710	5322 130 60159	BC847B
7716	4822 130 60373	BC857B

Note: Only the parts mentioned in this list are normal service spare parts.

AV BOARD

TABLE OF CONTENTS

Brief Introduction of the AV Board 12-1
Inputs, Source Sel. & Vol cont. L/R Circuit 12-2
HP amp / Pre-amp., Supply & Interconnection Circuit 12-3
Volume cont. Surr L/R, Cen & SW & Multiplexer Circuit 12-4
Digital in/out, S-video, Scart, & I^{2}C Expander Circuit 12-5
Bottom view - Chip & Discrete layouts (Part A to D) 12-6
Top view - Component & Chip layouts (Part E to H) 12-7
Bottom view Part A 12-8
Bottom view Part B 12-9
Bottom view Part C 12-10
Bottom view Part D 12-11
Top view Part E 12-12
Top view Part F 12-13
Top view Part G 12-14
Top view Part H 12-15
Electrical parts list 12-16

BRIEF INTRODUCTION OF THE AV BOARD

The AV Board consists of the following features :

a. IC 7130 (TDA7468D)

IC 7130 provides the source selection (TUNER, TV/AV Digital in, DVD/CD & AUX) and basic sound processing - bass, treble, volume & mute controls for the Front L/R loudspeakers.

Note: Although provided for, the AUX source (pin 3 and 26) are never selected & instead and additional IC 7422 (HEF4052BT) is used to include a TV in from the Scart connector socket.

Sound features are controlled by the microprocessor IC on the Front Board via I^{2}C Bus.

Undesirable noise during source switching are muted off via the software of the microprocessor IC on the Front Board.

b. IC 7422 (HEF4052BT)

This IC allows the additon of another TV source via the SCART connector socket. The output MUX_L/MUX_R will go to pin 4 and 25 of IC 7130.

c. Line out mute

Line out mute is done via the transistors 7100, 7132, 7133 and 7150 during Power up/down, Source and sound switching (MUTE-LO, active low) and Disc & Digital in modes (MUTE_AV, active high).

d. Headphone amplifier / pre-amplifier

IC 7230 (NJM4556AM) is used as headphone amplifer and pre-amplification for the Front L/R signal to the Amplifier board. The transistors matrix 7200, 7231, 7232, 7233 and 7250 allows the heaphone out to be muted when inserting the headphone

e. IC 7304 and 7330 (TDA7468D)

IC 7304 and 7330 provides creation of matrix sound (via Line-L/R from IC 7130) during non-DVD source and sound processing - bass, treble, volume & mute controls for the Center/Subwoofer and Surround L/R loudspeakers respectively.

Sound features are controlled by the microprocessor IC on the Front Board via I^{2}C Bus.

Undesirable noise during source switching are muted off via the software of the microprocessor IC on the Front Board.

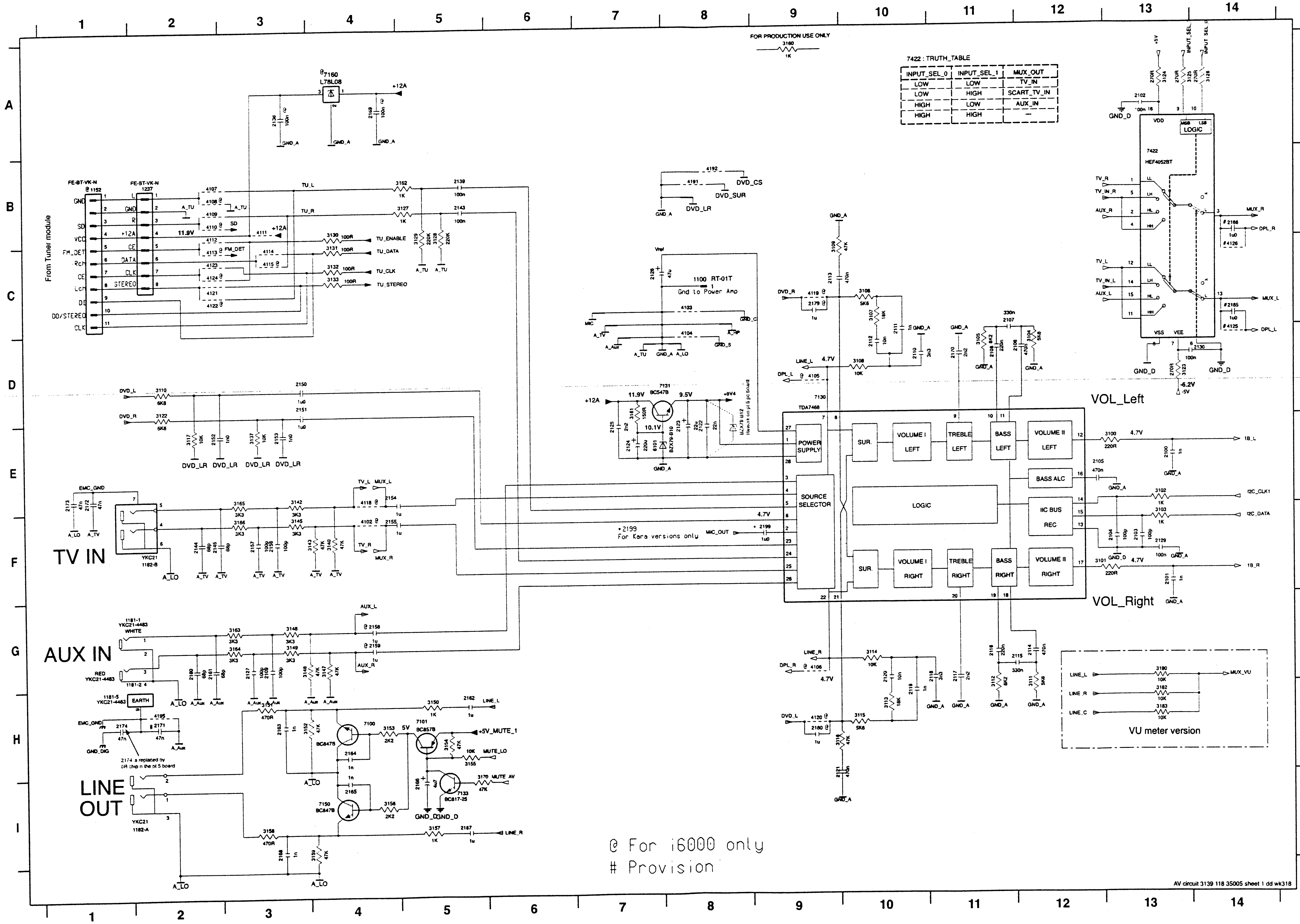
f. IC 7352 (74HC4051D)

This multiplexer output (MUX_DET) informs the microprocess IC on the Front Board on the type of connection & condition the set is in.

g. IC 7402 (M62320FP)

The IC serves as I^{2}C Expander to provide for additional control lines required.

INPUT, SOURCE SELECT & VOLUME CONTROL L/R CIRCUIT


From Tuner module
FE-BT-VK-N
FE-BT-VK-N
TV IN
AUX IN
LINE OUT
7160 L78L08
7131 BC547B
7130 TDA7468
POWER SUPPLY
SOURCE SELECTOR
SUR.
VOLUME I LEFT
TREBLE LEFT
BASS LEFT
VOLUME II LEFT
BASS ALC
LOGIC
IIC BUS REC
VOLUME I RIGHT
TREBLE RIGHT
BASS RIGHT
VOLUME II RIGHT
VOL_Left
VOL_Right
7422 HEF4052BT
FOR PRODUCTION USE ONLY
1100 RT-01T
Gnd to Power Amp
+2199 For Kara versions only
VU meter version
7100 BC847B
7101 BC857B
7133 BC817-25
7150 BC847B
+5V_MUTE_1
MUTE_LO
MUTE AV
I2C_CLK1
I2C_DATA
MUX_VU
@ For i6000 only
# Provision
AV circuit 3139 118 35005 sheet 1 dd wk318

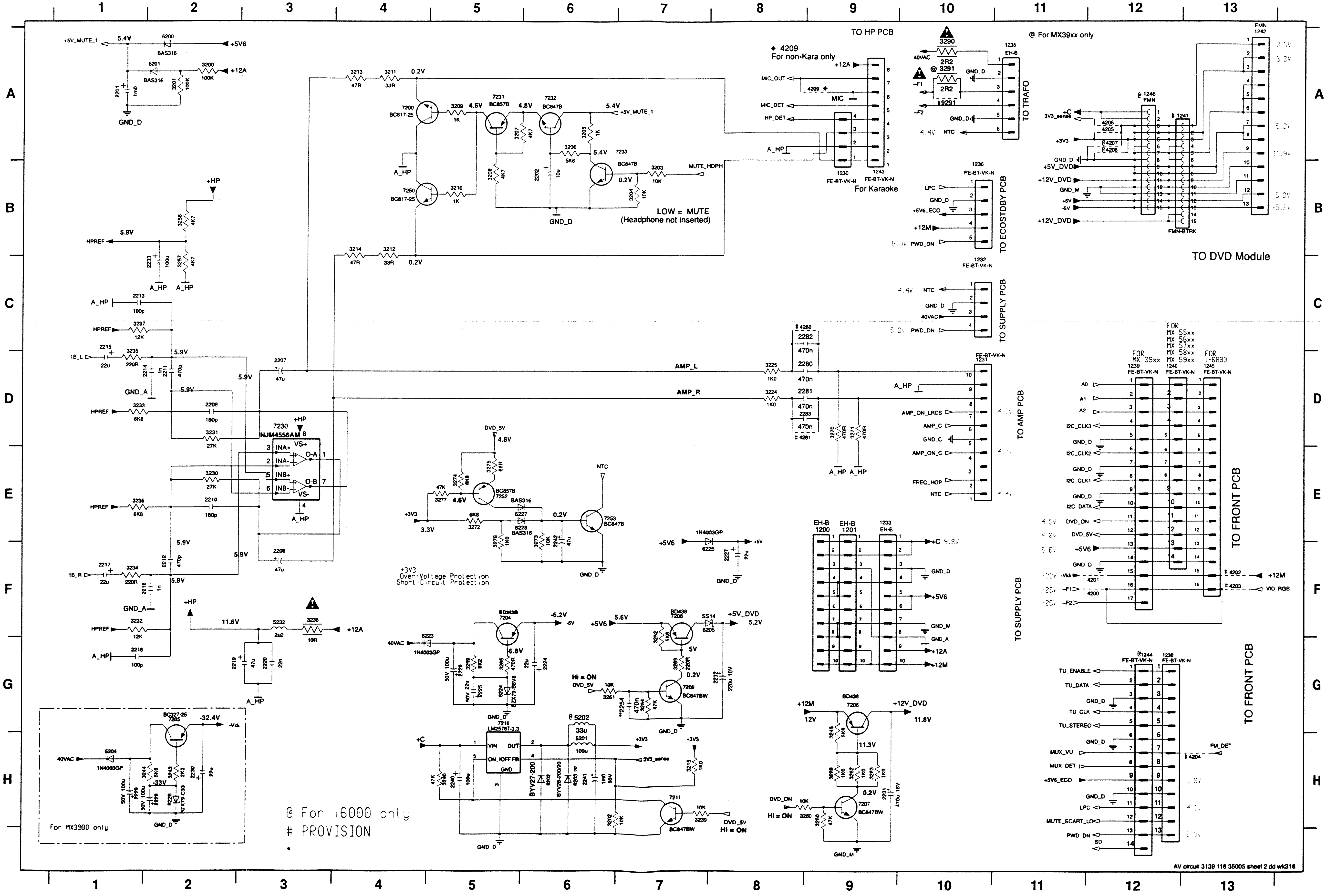
7422 : TRUTH_TABLE

INPUT_SEL_0	INPUT_SEL_1	MUX_OUT
LOW	LOW	TV_IN
LOW	HIGH	SCART_TV_IN
HIGH	LOW	AUX_IN
HIGH	HIGH	—

1100	C8
1152	B1
1181-1	G2
1181-2	G2
1181-5	H1
1182-A	I2
1182-B	F2
1237	B2
2100	E13
2101	F13
2102	A13
2103	F13
2104	F13
2105	E12
2106	D11
2107	C11
2108	D11
2109	G3
2110	D10
2111	D10
2112	D10
2113	C9
2114	G12
2115	G12
2116	G11
2117	G11
2118	G11
2119	H10
2120	G10
2121	I9
2122	E8
2123	E8
2124	E7
2125	E7
2126	C7
2127	G3
2129	F13
2130	D14
2136	A3
2139	B5
2143	B5
2144	F2
2145	F2
2150	D3
2151	D3
2152	E2
2153	E3
2154	E4
2155	F4
2156	F3
2157	F3
2158	G4
2159	G4
2160	G2
2161	G2
2162	H5
2163	H3
2164	H4
2165	I4
2166	I5
2167	I5
2168	I3
2169	A4
2170	D11
2171	H2
2172	E1
2173	E1
2174	H1
2179	C9
2180	H9
2185	C14
2186	B14
2199	F9
3100	E13
3101	F12
3102	E13
3103	F13
3104	D12
3105	D11
3106	C10
3107	C10
3108	D10
3109	C9
3110	D2
3111	H12
3112	H11
3113	H10
3114	G10
3115	H10
3116	H9
3117	E2
3122	D2
3123	D13
3124	A13
3125	A13
3126	A14
3127	B5
3128	B5
3129	B5
3130	B4
3131	C4
3132	C4
3133	C4
3137	E3
3140	F4
3142	E3
3143	F4
3145	F3
3146	G3
3147	G4
3148	G3
3149	G3
3150	H5
3151	H3
3152	H3
3153	H4
3154	H5
3155	H5
3156	I4
3157	I5
3158	I3
3159	I4
3160	A9
3161	D7
3162	B5
3163	G3
3164	G3
3165	E3
3166	F3
3170	I5
3180	G13
3182	H13
3183	H13
4102	F4
4103	C8
4104	D8
4105	D9
4106	G9
4107	B2
4108	B2
4109	B2
4110	B2
4111	B3
4112	B2
4113	C2
4114	C3
4115	C3
4118	E4
4119	C9
4120	H9
4121	C2
4122	C2
4123	C2
4124	C2
4125	D14
4126	C14
4191	B8
4192	B8
4195	H2
6101	E7
7100	H4
7101	H5
7131	D7
7133	I5
7150	I4
7160	A4

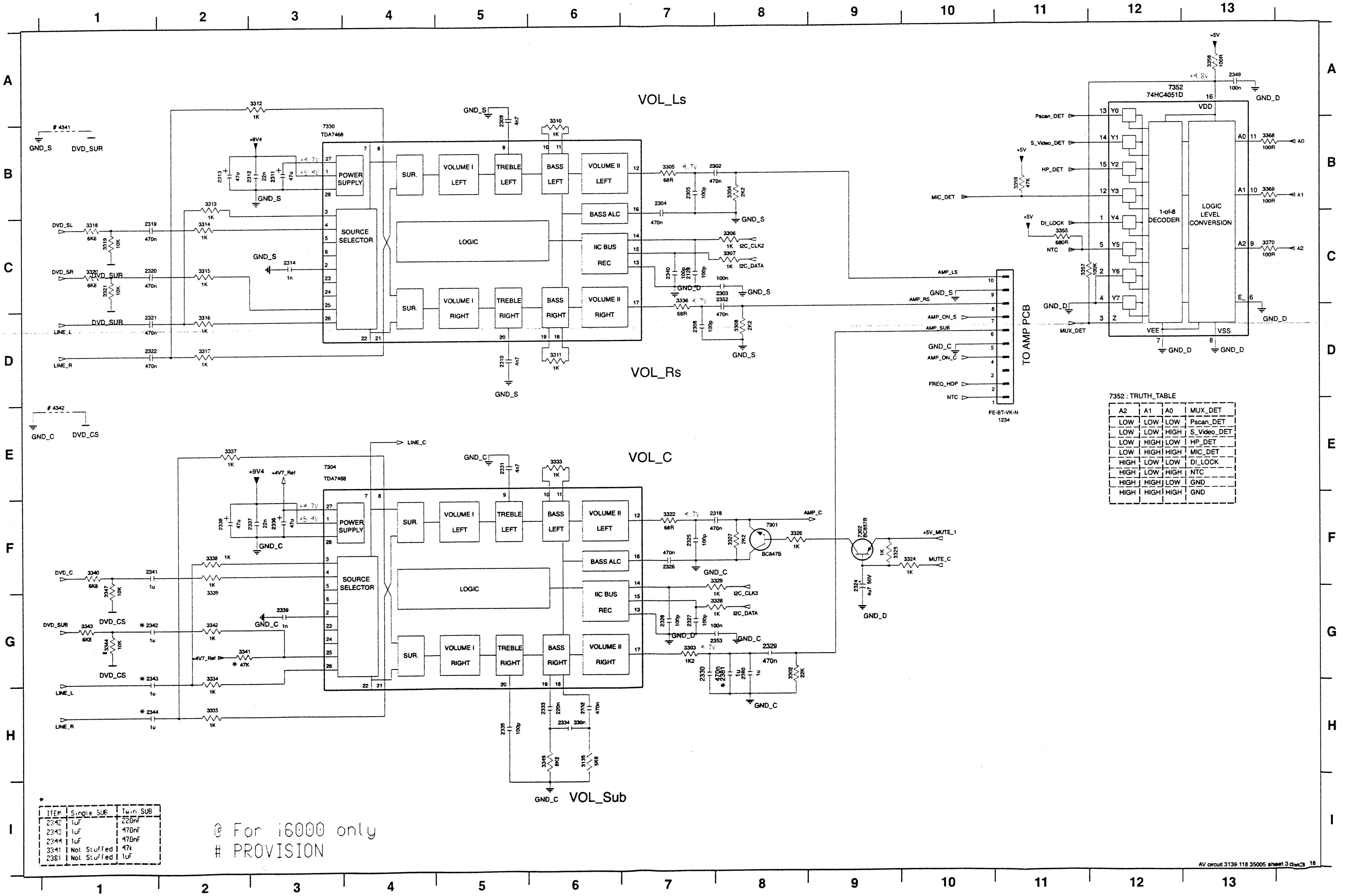
PRE-AMPLIFIER, SUPPLY & INTERCONNECTION CIRCUIT

1200 E9
1201 E9
1230 B9
1231 D10
1232 C10
1233 E9
1235 A11
1236 B10
1238 G12
1239 D12
1240 D12
1241 A12
1242 A13
1243 B9
1244 G12
1245 D13
1246 A12
2201 A1
2202 B6
2207 D3
2208 F3
2209 D2
2210 E2
2211 D2
2212 F2
2213 C1
2214 D2
2215 C1
2216 F2
2217 F1
2218 G1
2219 G2
2220 G3
2224 G6
2225 G5
2226 G5
2227 F8
2228 H2
2229 H1
2230 H2
2231 H9
2232 G8
2233 C2
2240 H5
2241 H6
2242 E6
2254 G7
2280 D8
2281 D8
2282 C8
2283 D8
3200 A2
3201 A2
3202 H6
3203 B7
3204 B7
3205 A6
3206 A6
3207 A5
3208 B5
3209 A5
3210 B5
3211 A4
3212 B4
3213 A4
3214 B4
3215 H7
3224 D8
3225 D8
3230 E2
3231 D2
3232 F1
3233 D1
3234 F1
3235 D1
3236 E1
3237 C1
3238 F3
3239 H7
3240 H5
3243 H2
3244 H2
3245 G9
3250 H9
3252 F7
3254 G7
3256 B2
3257 C2
3259 G5
3260 H9
3261 G6
3262 H9
3263 H9
3265 G5
3268 H9
3269 G7
3270 D9
3271 D9
3272 E5
3273 E6
3274 E5
3275 E5
3276 E5
3277 E5
3290 A10
3291 A10
4200 F12
4201 F12
4202 F13
4203 F13
4204 H13
4205 A12
4206 A12
4207 A12
4208 A12
4209 A9
4280 C8
4281 D8
5201 H6
5202 G6
5232 F3
6200 A2
6201 A2
6202 H6
6203 H6
6204 H1
6205 F7
6223 G5
6224 G5
6225 F7
6226 H2
6227 E5
6228 E5
7200 A4
7204 F5
7205 G2
7206 G9
7207 H9
7208 F7
7209 G7
7210 G5
7211 H7
7230 D3
7231 A5
7232 A6
7233 A7
7250 B4
7252 E5
7253 E6
9291 A10


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
+5V_MUTE_1
5.4V
6200
BAS316
+5V6
6201
BAS316
3200
100K
+12A
2201
1m0
3201
100K
GND_D
3213
47R
3211
33R
0.2V
7200
BC817-25
3209
1K
4.6V
7231
BC857B
4.8V
7232
BC847B
5.4V
+5V_MUTE_1
3207
4K7
3205
1K
3206
5K6
7233
BC847B
3203
10K
MUTE_HDPH
0.2V
3204
10K
A_HP
7250
BC817-25
3210
1K
3208
4K7
2202
10u
GND_D
LOW = MUTE
(Headphone not inserted)
+HP
3256
4K7
5.9V
HPREF
2233
100u
3257
4K7
A_HP
3214
47R
3212
33R
0.2V
TO HP PCB
* 4209
For non-Kara only
+12A
MIC_OUT
4209 *
MIC
MIC_DET
HP_DET
A_HP
1230
FE-BT-VK-N
1243
FE-BT-VK-N
For Karaoke
3290
2R2
40VAC
@ 3291
2R2
-F1
GND_D
#9291
-F2
NTC
1235
EH-B
TO TRAFO
@ For MX39xx only
3V3_sense
+C
4206
4205
+3V3
#4207
#4208
GND_D
+5V_DVD
+12V_DVD
GND_M
+5V
-5V
@ 1246
FMN
# 1241
FMN-BTRK
FMN
1242
TO DVD Module
1236
FE-BT-VK-N
LPC
GND_D
+5V6_ECO
+12M
PWD_DN
TO ECOSTDBY PCB
1232
FE-BT-VK-N
NTC
GND_D
40VAC
PWD_DN
TO SUPPLY PCB
A_HP
2213
100p
HPREF
3237
12K
2215
22u
3235
220R
1B_L
5.9V
2214
2211
1n
470p
GND_A
2207
47u
5.9V
AMP_L
AMP_R
# 4280
2282
470n
2280
470n
3225
1K0
3224
1K0
2281
470n
2283
470n
# 4281
3270
470R
3271
470R
A_HP
A_HP
1231
FE-BT-VK-N
A_HP
AMP_ON_LRCS
AMP_C
GND_C
AMP_ON_C
FREQ_HOP
NTC
TO AMP PCB
3233
6K8
2209
180p
3231
27K
7230
NJM4556AM
+HP
8
INA+
INA-
INB+
INB-
VS+
VS-
O-A
O-B
4
A_HP
3230
27K
3236
6K8
2210
180p
DVD_5V
4.8V
3274
6K8
3275
68R
47K
3277
4.6V
BC857B
7252
BAS316
6227
6228
BAS316
0.2V
7253
BC847B
NTC
+3V3
3.3V
6K8
3272
3276
1K0
2273
10K
2242
47u
GND_D
+3V3
Over-Voltage Protection
Short-Circuit Protection
+5V6
1N4003GP
6225
+5V
2227
22u
GND_D
EH-B
1200
EH-B
1201
1233
EH-B
+C
GND_D
+5V6
GND_M
GND_A
+12A
+12M
FOR
MX 39xx
1239
FE-BT-VK-N
FOR
MX 55xx
MX 56xx
MX 57xx
MX 58xx
MX 59xx
1240
FE-BT-VK-N
FOR
i6000
1245
FE-BT-VK-N
A0
A1
A2
I2C_CLK3
GND_D
I2C_CLK2
I2C_CLK1
I2C_DATA
DVD_ON
DVD_5V
+5V6
-Vkk
-F1
-F2
4201
4200
# 4202
+12M
# 4203
VID_RGB
TO SUPPLY PCB
TO FRONT PCB
2217
22u
3234
220R
1B_R
2212
470p
2216
1n
5.9V
2208
47u
GND_A
HPREF
3232
12K
A_HP
2218
100p
+HP
11.6V
5232
2u2
3238
10R
+12A
2219
47u
2220
22n
A_HP
BD242B
7204
-6.2V
-5V
40VAC
6223
1N4003GP
-6.8V
2226
50V 100u
3269
8K2
3265
470R
2224
22u
2225
50V 22u
6224
BZX79-B6V8
+5V6
5.6V
BD438
7208
SS14
6205
+5V_DVD
5.2V
3252
5K6
5V
3269
220R
0.2V
Hi = ON
DVD_5V
10K
3261
2254
470n
3254
10K
7209
BC847BW
2232
220u 10V
GND_D
+12M
12V
BD436
7206
+12V_DVD
11.8V
3245
5K6
11.3V
3268
1K0
3262
1K0
3263
1K0
2231
470u 16V
0.2V
DVD_ON
Hi = ON
10K
3260
3250
47K
7207
BC847BW
GND_M
BC327-25
7205
-32.4V
-Vkk
40VAC
6204
1N4003GP
3244
5K6
3243
2K2
-33V
2230
22u
2229
50V 100u
2228
50V 100u
6226
BZX79-C33
GND_D
For MX3900 only
+C
7210
LM2576T-3.3
VIN
OUT
ON_IOFF
FB
GND
@ 5202
33u
5201
100u
+3V3
3V3_sense
2240
47K
100u
BYV27-200
6202
BYV28-200
6203
2241
1m0
50V
3215
1K0
7211
3202
10K
10K
3239
DVD_5V
Hi = ON
BC847BW
GND_D
@ For i6000 only
# PROVISION
@1244
FE-BT-VK-N
1238
FE-BT-VK-N
TU_ENABLE
TU_DATA
GND_D
TU_CLK
TU_STEREO
GND_D
MUX_VU
MUX_DET
+5V6_ECO
GND_D
LPC
MUTE_SCART_LO
PWD_DN
SD
FM_DET
# 4204
TO FRONT PCB
AV circuit 3139 118 35005 sheet 2 dd wk318

VOLUME CONTROL SURR., CENTER & SW AND CONTROL MULTIPLEXER CIRCUIT

1234 E11
2128 C7
2302 B8
2303 C8
2304 B7
2305 B7
2308 D7
2309 A5
2310 D5
2311 B3
2312 B3
2313 B2
2314 C3
2318 F8
2319 C1
2320 C1
2321 D1
2322 D1
2324 F9
2325 F7
2326 F7
2327 G7
2328 G7
2329 G8
2330 G7
2331 E5
2332 H6
2333 H6
2334 H6
2335 H5
2336 F3
2337 F3
2338 F2
2339 G3
2340 C7
2341 F1
2342 G1
2343 G1
2344 H1
2349 A13
2352 C8
2353 G8
2380 G8
2381 G8
3135 H6
3302 G8
3303 G7
3304 B8
3305 B7
3306 C8
3307 C8
3308 D8
3310 B6
3311 D6
3312 A3
3313 B2
3314 C2
3315 C2
3316 D2
3317 D2
3318 C1
3319 C1
3320 C1
3321 C1
3322 F7
3324 F10
3325 F9
3326 F8
3327 F8
3328 G8
3329 F8
3333 E6
3334 G2
3335 H2
3336 C7
3337 E2
3338 F2
3339 G2
3340 F1
3341 G2
3342 G2
3343 G1
3344 G1
3347 F1
3349 H6
3355 C11
3356 A13
3357 C11
3359 B11
3368 B13
3369 B13
3370 C13
4341 B1
4342 E1
7301 F8
7302 F9


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
VOL_Ls
VOL_Rs
VOL_C
VOL_Sub
# 4341
GND_S
DVD_SUR
# 4342
GND_C
DVD_CS
7330
TDA7468
7304
TDA7468
+9V4
+4V7_Ref
POWER SUPPLY
SOURCE SELECTOR
LOGIC
SUR.
VOLUME I LEFT
VOLUME I RIGHT
TREBLE LEFT
TREBLE RIGHT
BASS LEFT
BASS RIGHT
VOLUME II LEFT
VOLUME II RIGHT
BASS ALC
IIC BUS REC
DVD_SL
DVD_SR
LINE_L
LINE_R
DVD_C
DVD_SUB
I2C_CLK2
I2C_DATA
I2C_CLK3
LINE_C
AMP_C
+5V_MUTE_1
MUTE_C
7301
BC847B
7302
BC857B
GND_D
AMP_LS
AMP_RS
AMP_ON_S
AMP_SUB
AMP_ON_C
FREQ_HOP
NTC
TO AMP PCB
FE-BT-VK-N
1234
7352
74HC4051D
+5V
Pscan_DET
S_Video_DET
HP_DET
MIC_DET
DI_LOCK
MUX_DET
1-of-8 DECODER
LOGIC LEVEL CONVERSION
VDD
VEE
VSS
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7
Z
E_
A0
A1
A2

7352 : TRUTH_TABLE

A2	A1	A0	MUX_DET
LOW	LOW	LOW	Pscan_DET
LOW	LOW	HIGH	S_Video_DET
LOW	HIGH	LOW	HP_DET
LOW	HIGH	HIGH	MIC_DET
HIGH	LOW	LOW	DI_LOCK
HIGH	LOW	HIGH	NTC
HIGH	HIGH	LOW	GND
HIGH	HIGH	HIGH	GND

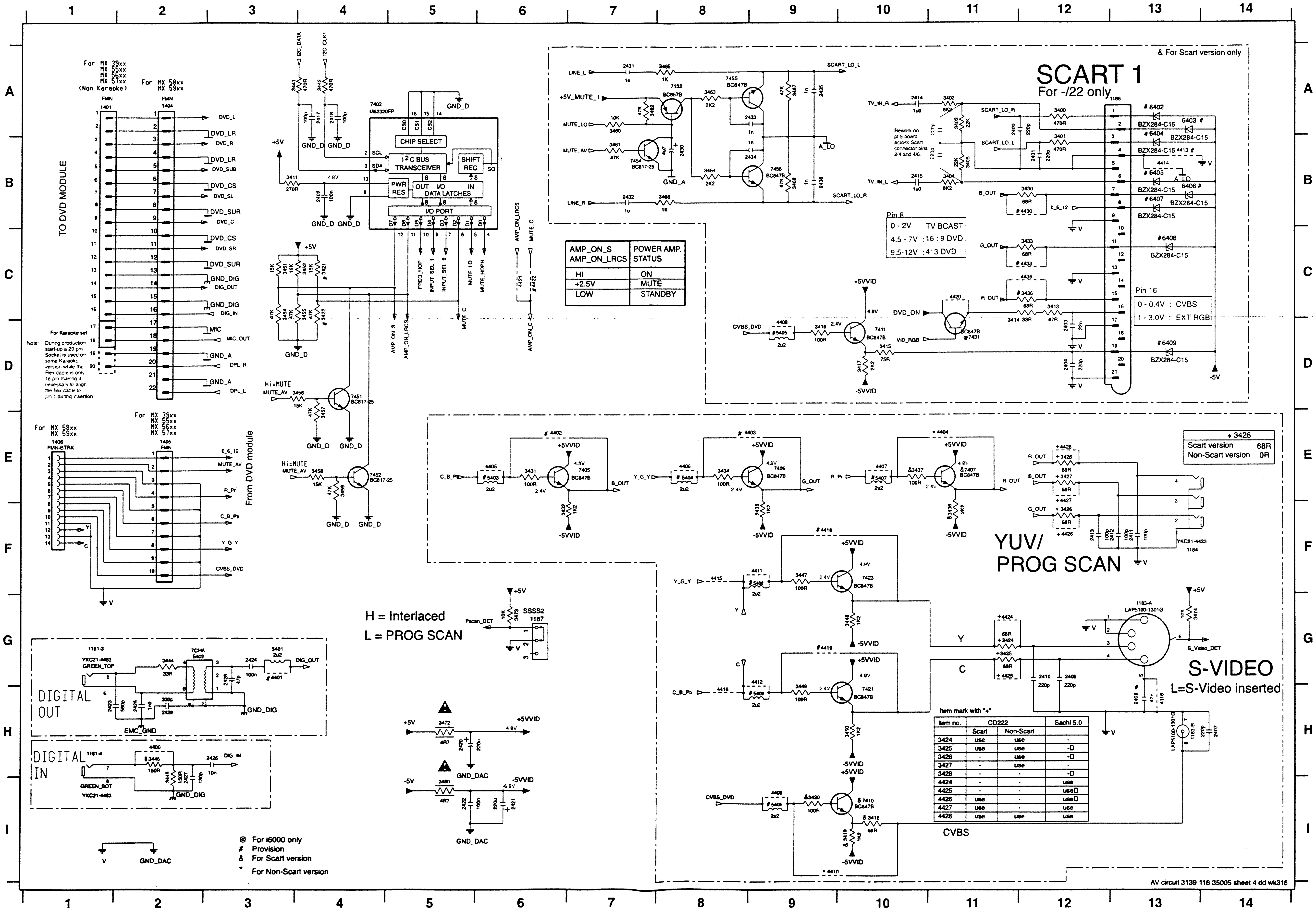
*

ITEM	Single SUB	Twin SUB
2342	1uF	220nF
2343	1uF	470nF
2344	1uF	470nF
3341	Not Stuffed	47k
2381	Not Stuffed	1uF

@ For i6000 only
# PROVISION

DIGITAL I/O, S-VIDEO, SCART, & I²C EXPANDER CIRCUITS

1181-3	G1
1181-4	H1
1183-A	G13
1183-B	H13
1184	F13
1186	A12
1187	G6
1401	A1
1404	A2
1405	E2
1406	E1
2400	A11
2401	B12
2402	B4
2403	D12
2404	D12
2407	H14
2408	H13
2409	G12
2410	G12
2411	F13
2412	F13
2413	F12
2414	A10
2415	B10
2417	A4
2418	A4
2420	H5
2421	I6
2422	I5
2423	H1
2424	G3
2425	H2
2426	H3
2427	I2
2428	G3
2429	H2
2430	B8
2431	A7
2432	B7
2433	A9
2434	B9
2435	A9
2436	B9
3400	A12
3401	B12
3402	A11
3403	A11
3404	B11
3405	B11
3411	B3
3413	C12
3414	C12
3415	D10
3416	D9
3417	D10
3418	I10
3419	I10
3420	I9
3421	C4
3422	C4
3424	G11
3425	G11
3426	F12
3427	E12
3428	E12
3430	B12
3431	E6
3432	F6
3433	C12
3434	E8
3435	F9
3436	C12
3437	E10
3438	F11
3441	A3
3442	A4
3444	G2
3445	I2
3446	H2
3447	F9
3448	G10
3449	H9
3450	H10
3451	C3
3452	C4
3454	C3
3455	C4
3456	D4
3457	E4
3458	E4
3459	E4
3460	A7
3461	B7
3462	A7
3463	A8
3464	B8
3465	A8
3466	B8
3467	A9
3468	B9
3472	H5
3473	G6
3474	G13
3480	I5
4116	H13
4400	H2
4401	G3
4402	E6
4403	E9
4404	E11
4405	E6
4406	E8
4407	E10
4408	D9
4409	I9
4410	I9
4411	F9
4412	G9
4413	B13
4414	B13
4415	F8
4416	H8
4418	F9
4419	G9
4420	C11
4421	C6
4422	C6
4424	G11
4425	G11
4426	F12
4427	F12
4428	E12
4430	B12
4433	C12
4436	C12
5401	G3
5402	G2
5403	E6
5404	E8
5405	D9
5406	I9
5407	E10
5408	F9
5409	H9
6402	A13
6403	A13
6404	B13
6405	B13
6406	B13
6407	B13
6408	C13
6409	D13
7132	A8
7405	E7
7406	E9
7407	E11
7410	I10
7411	D10
7421	H10
7423	F10
7431	D11
7451	D4
7452	E4
7454	B7
7455	A8
7456	B9



SCART 1
For -/22 only
& For Scart version only
TO DVD MODULE
From DVD module
For MX 39xx MX 55xx MX 56xx MX 57xx (Non Karaoke)
For MX 58xx MX 59xx
For Karaoke set
CHIP SELECT
I²C BUS TRANSCEIVER
SHIFT REG
PWR RES
OUT I/O IN DATA LATCHES
I/O PORT
M62320FP
YUV/ PROG SCAN
S-VIDEO
L=S-Video inserted
DIGITAL OUT
DIGITAL IN
CVBS
Y
C
Hi=MUTE
DVD_ON
Pin 8
0 - 2V : TV BCAST
4.5 - 7V : 16 : 9 DVD
9.5-12V : 4 : 3 DVD
Pin 16
0 - 0.4V : CVBS
1 - 3.0V : EXT RGB

AMP_ON_S AMP_ON_LRCS	POWER AMP. STATUS
HI	ON
+2.5V	MUTE
LOW	STANDBY

∗3428	
Scart version	68R
Non-Scart version	0R

H = Interlaced
L = PROG SCAN

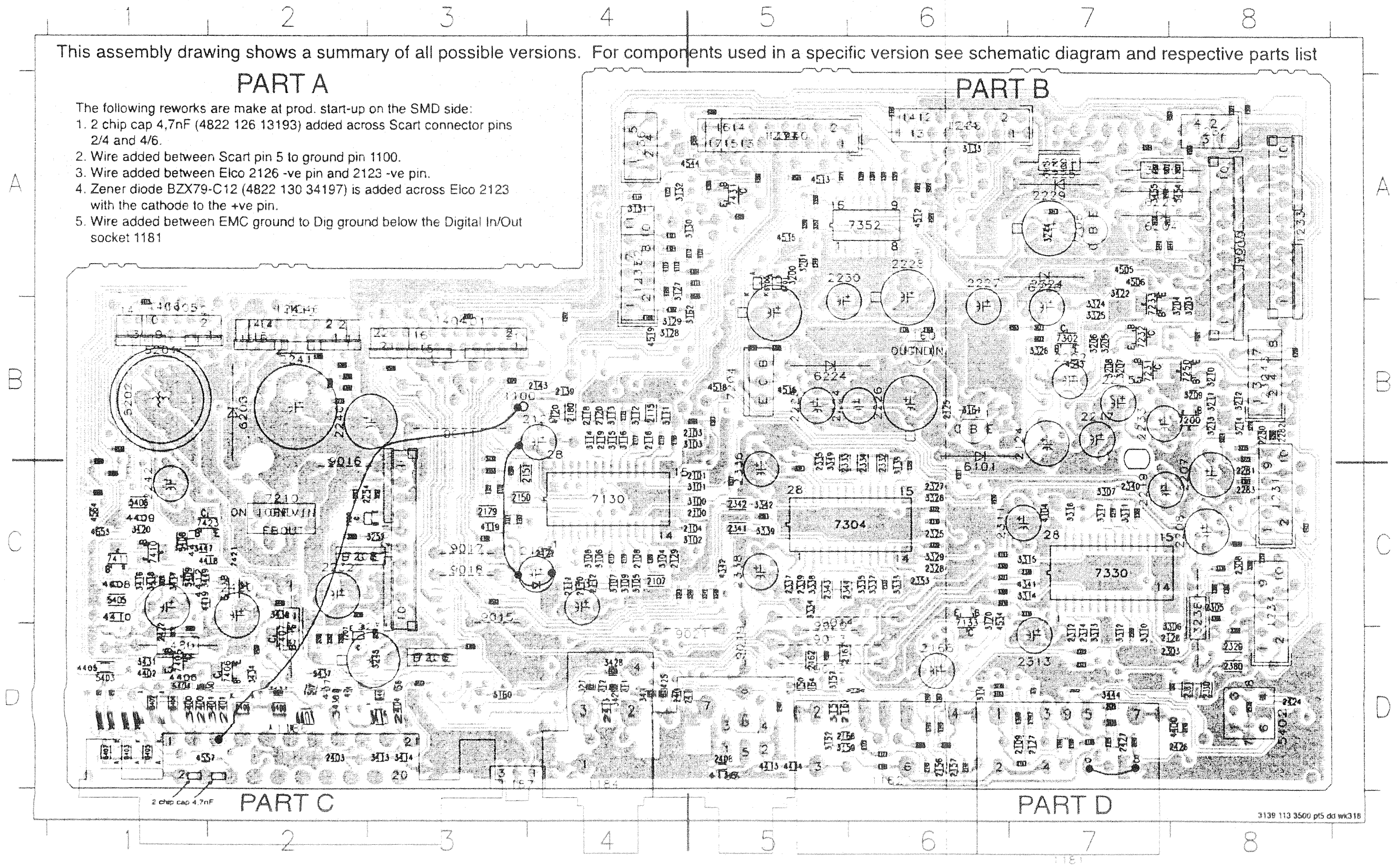
Item mark with "+"

Item no.	CD222		Sachi 5.0
	Scart	Non-Scart	
3424	use	use	-
3425	use	use	-☐
3426	-	use	-☐
3427	-	use	-
3428	-	-	-☐
4424	-	-	use
4425	-	-	use☐
4426	use	-	use☐
4427	use	-	use
4428	use	use	use

@ For i6000 only
# Provision
& For Scart version
* For Non-Scart version

BOTTOM VIEW - SMD & COMPONENT

2100	C5	2145	D6	2304	C7	2349	A5	3101	C5	3145	D6	3210	B8	3308	C8	3343	C4	3426	D4	4109	A4	4341	C7	4436	D2	4545	A5	6408	D2
2101	C5	2150	C3	2305	C8	2352	C8	3102	C5	3146	D7	3211	B8	3310	D7	3344	C5	3427	D4	4110	A6	4342	C5	4500	A8	4546	A5	6409	D3
2103	B5	2151	C3	2308	C8	2353	C6	3103	B5	3147	D7	3212	B8	3311	C7	3347	C5	3428	D4	4111	A5	4400	D8	4501	A8	4547	B4	7130	C4
2104	C5	2152	C3	2309	D7	2380	D8	3104	C4	3148	D6	3213	B8	3312	D7	3349	B5	3430	D1	4112	A5	4402	D1	4502	A8	4548	B5	7133	C6
2105	B4	2153	C3	2310	C7	2381	D8	3105	C4	3149	D7	3214	B8	3313	D7	3355	A5	3431	D1	4113	A4	4403	D2	4503	A8	4549	A6	7200	B8
2106	C4	2156	D6	2312	D7	2400	D1	3106	C4	3150	D5	3215	B2	3314	C7	3356	A5	3432	D1	4114	A4	4404	D2	4504	A7	4556	D3	7207	D2
2107	C4	2157	D6	2314	D7	2401	D2	3107	C4	3151	D5	3224	B8	3315	C7	3357	A5	3433	D2	4115	A4	4405	D1	4505	A7	4557	D1	7209	C2
2108	C4	2160	D7	2318	C6	2402	A7	3108	C4	3152	D5	3225	B8	3316	C7	3359	A6	3434	D2	4116	D5	4406	D1	4506	A7	4561	C5	7231	B7
2109	D7	2161	D7	2319	C7	2403	D2	3109	C4	3154	D6	3243	A7	3317	C7	3368	A6	3435	D2	4119	C3	4407	D2	4507	B8	4564	C1	7232	B7
2110	C4	2162	D5	2320	C7	2404	D3	3110	C3	3157	D5	3244	A7	3318	C6	3369	A6	3436	D2	4120	B4	4408	C1	4508	C8	4565	B7	7233	B7
2111	C4	2163	D5	2321	D7	2407	D5	3111	B4	3158	D6	3245	D3	3319	C6	3370	A6	3437	D2	4121	A4	4409	C1	4510	C6	4579	B3	7250	B8
2112	C4	2164	D5	2322	D7	2408	D5	3112	B4	3159	D5	3250	C2	3320	C6	3400	D1	3438	C2	4122	A5	4410	C1	4511	C6	4585	D5	7302	B7
2113	C4	2167	D5	2325	C6	2409	D4	3113	B4	3160	D3	3252	C3	3321	C6	3401	D2	3441	A8	4123	A4	4411	C1	4512	A6	4593	A5	7304	C6
2114	B4	2168	D5	2326	C6	2410	D5	3114	B4	3161	B6	3254	C3	3322	C6	3402	D1	3442	A7	4124	A4	4412	C1	4513	A5	4598	C3	7330	C7
2115	B4	2169	B6	2327	C6	2411	D4	3115	B4	3162	B5	3259	B5	3324	B7	3403	D1	3444	D7	4191	C6	4413	D5	4514	A5	4653	C1	7352	A6
2116	B4	2170	C4	2328	C6	2412	D4	3116	B4	3163	D6	3260	D3	3325	B7	3404	D1	3445	D7	4192	C3	4414	D5	4515	A5	5403	D1	7405	D1
2117	B4	2171	D7	2329	D8	2413	D4	3117	C3	3164	D7	3261	C2	3326	B7	3405	D1	3446	D8	4195	D7	4415	B1	4516	B5	5404	D1	7406	D2
2118	B4	2172	D6	2330	D8	2414	D1	3122	C3	3165	D6	3262	D2	3327	C6	3411	A7	3447	C1	4198	D6	4416	C1	4517	C5	5405	C1	7407	D2
2119	B4	2173	D6	2331	C6	2415	D1	3127	A4	3166	D6	3263	D2	3328	C6	3413	D3	3448	C2	4200	A5	4418	C2	4518	B5	5406	C1	7410	C1
2120	B4	2174	D7	2332	C6	2417	A7	3128	B4	3170	C6	3265	B5	3329	C6	3414	D3	3449	C1	4201	A6	4419	C1	4519	B4	5407	D2	7411	C1
2121	B4	2179	C3	2333	C5	2418	A7	3129	B4	3200	A5	3268	D2	3333	C6	3415	D3	3450	D1	4202	A6	4420	A5	4520	B3	5408	C1	7421	C2
2122	C4	2180	B4	2334	C6	2422	D1	3130	A5	3201	A5	3269	C2	3334	C5	3416	C1	3451	A8	4203	A5	4421	C8	4521	B3	5409	C1	7423	C1
2125	B6	2199	D3	2335	B5	2423	D7	3131	A4	3202	B2	3270	B8	3335	C6	3417	C1	3452	A7	4204	A5	4422	B7	4534	C6	6200	A5	7431	A5
2127	D7	2254	C2	2337	C5	2424	D8	3132	A4	3203	B8	3271	B8	3336	C8	3418	C1	3454	A8	4205	B2	4424	D4	4538	B1	6201	A5		
2128	D8	2280	B8	2339	C5	2425	D7	3133	A6	3204	B8	3302	D8	3337	C6	3419	C1	3455	A7	4206	B2	4425	D4	4539	C1	6402	D1		
2129	C4	2281	C8	2340	C7	2426	D8	3135	C6	3205	B7	3303	D8	3338	C5	3420	C1	3473	D3	4207	B2	4426	D4	4540	C1	6403	D1		
2136	B6	2282	B8	2341	C5	2427	D7	3137	B3	3206	B7	3304	C8	3339	C5	3421	B7	3474	A5	4208	B2	4427	D4	4541	B5	6404	D1		
2139	B4	2283	C8	2342	C5	2428	D8	3140	D6	3207	B7	3305	C8	3340	C5	3422	A7	4104	C7	4209	B8	4428	D4	4542	C3	6405	D1		
2143	B4	2302	C8	2343	C5	2429	D7	3142	D6	3208	B7	3306	D8	3341	C5	3424	D4	4107	B4	4280	B8	4430	D1	4543	B7	6406	D2		
2144	D6	2303	D8	2344	C5	3100	C5	3143	D6	3209	B8	3307	C7	3342	C5	3425	D4	4108	B4	4281	C8	4433	D2	4544	A5	6407	D1		



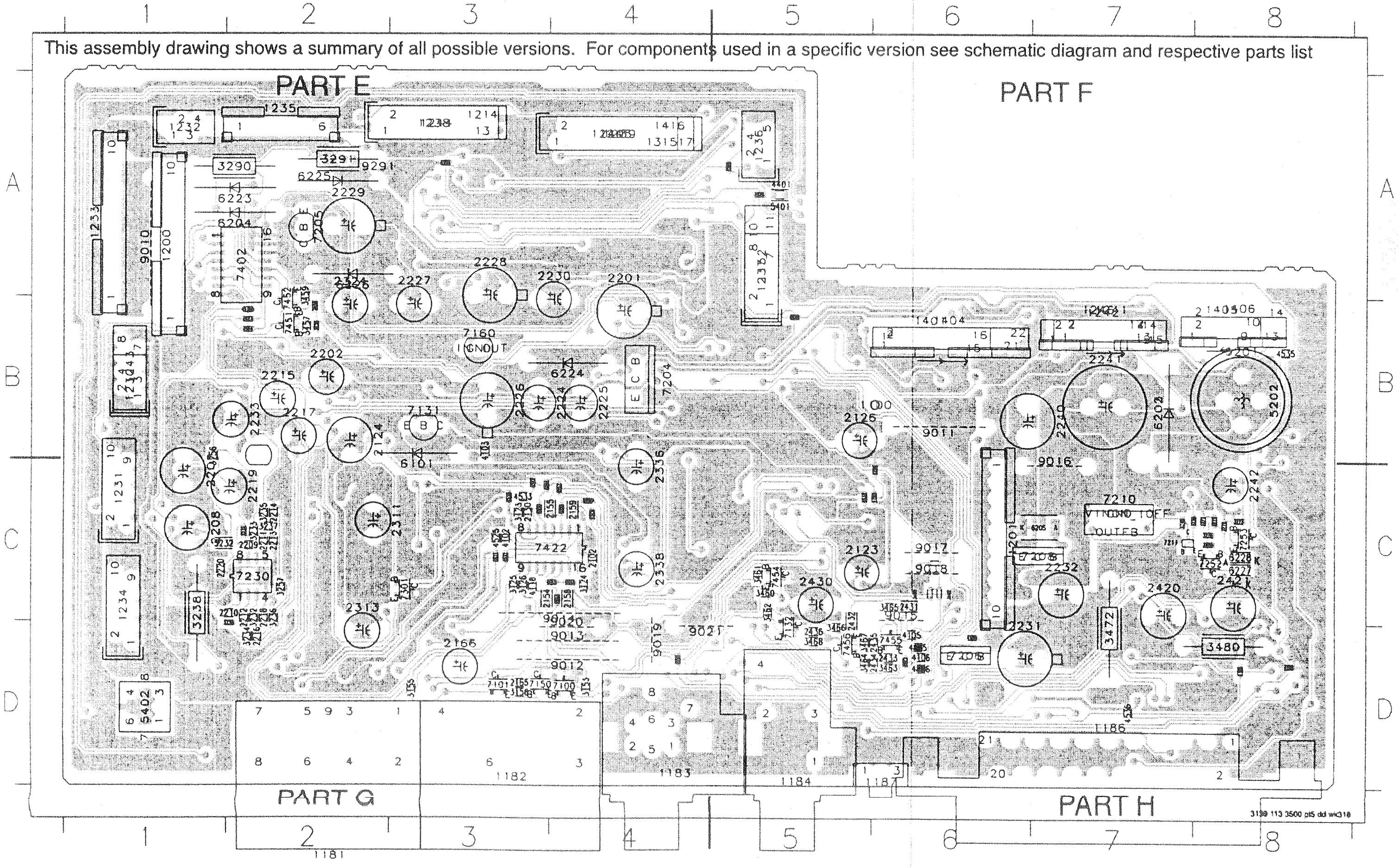
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list

The following reworks are make at prod. start-up on the SMD side:

1. 2 chip cap 4,7nF (4822 126 13193) added across Scart connector pins 2/4 and 4/6.
2. Wire added between Scart pin 5 to ground pin 1100.
3. Wire added between Elco 2126 -ve pin and 2123 -ve pin.
4. Zener diode BZX79-C12 (4822 130 34197) is added across Elco 2123 with the cathode to the +ve pin.
5. Wire added between EMC ground to Dig ground below the Digital In/Out socket 1181

TOP VIEW - CHIP & COMPONENT

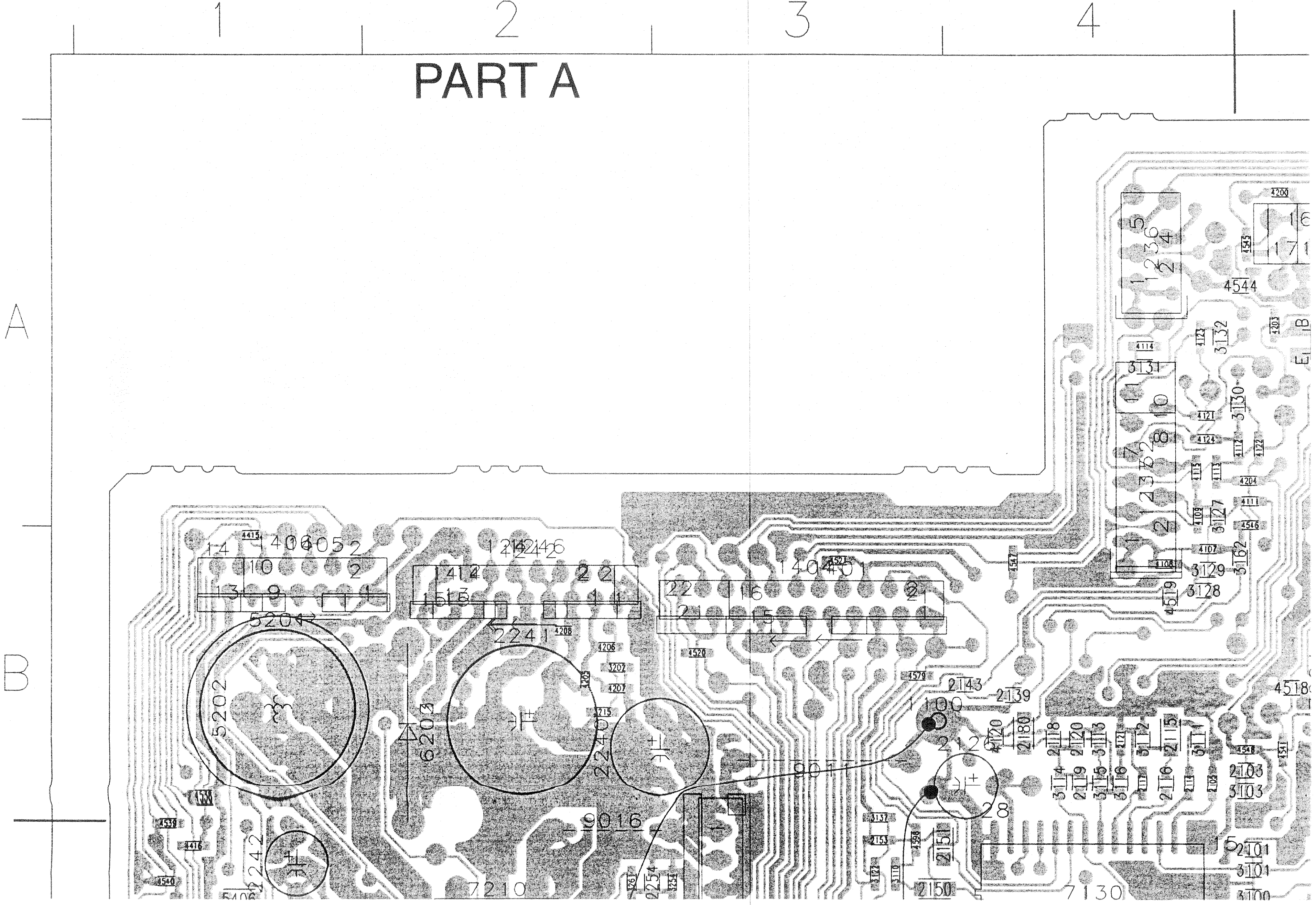
1100	B6
1152	A5
1182	D3
1183	D4
1184	D5
1186	D7
1187	D6
1200	A1
1201	C6
1230	B1
1231	C1
1232	A1
1233	A1
1234	C1
1235	A2
1236	A5
1237	A5
1238	A3
1239	A4
1240	A4
1241	B7
1242	B7
1243	B1
1244	A3
1245	A4
1246	B7
1401	B6
1404	B6
1405	B8
1406	B8
2102	C4
2123	C5
2124	B2
2126	B5
2130	C3
2154	C3
2155	C4
2158	C4
2159	C4
2165	D3
2166	D3
2185	D6
2186	D6
2201	A4
2202	B2
2207	C1
2208	C1
2209	C2
2210	C2
2211	C2
2212	C2
2213	C2
2214	C2
2215	B2
2216	D2
2217	B2
2218	C2
2219	C2
2220	C1
2224	B4
2225	B4
2226	B3
2227	A3
2228	A3
2229	A2
2230	A4
2231	D6
2232	C7
2233	B2
2240	B7
2241	B7
2242	C8
2311	C3
2313	C2
2324	A2
2336	C4
2338	C4
2420	C7
2421	C8
2430	C5
2431	C6
2432	C5
2433	D6
2434	D6
2435	D6
2436	D5
3123	C3
3124	C4
3125	C3
3126	C3
3153	D4
3155	D3
3156	D3
3180	C6
3182	C6
3183	C6
3230	D2
3231	C2
3232	C2
3233	C2
3234	D2
3235	C2
3236	C2
3237	C2
3238	C1
3239	C7
3240	C7
3256	B1
3257	C2
3272	C8
3273	C8
3274	C8
3275	C8
3276	C8
3277	C8
3290	A2
3291	A2
3456	B2
3457	B2
3458	B2
3459	B2
3460	C5
3461	C5
3462	C5
3463	D6
3464	D5
3465	C6
3466	D5
3467	D5
3468	D5
3472	D7
3480	D8
4102	C3
4103	B3
4105	D6
4106	D6
4118	C3
4125	D6
4126	D6
4193	C6
4194	C6
4196	D8
4197	D8
4401	A5
45100	B2
4522	D6
4523	B2
4524	B2
4525	C3
4526	A5
4527	C3
4528	B5
4529	C4
4530	C3
4531	C3
4532	C3
4533	C3
4535	B8
4536	D7
4537	C5
4550	C3
4551	C3
4552	C4
4553	C4
4554	D4
4555	A3
4558	C4
4559	C4
4560	D6
4562	C4
4563	C4
4599	A5
5201	B8
5202	B8
5232	C1
5401	A5
5402	D1
6101	C3
6202	B7
6203	B7
6204	A2
6205	C7
6223	A2
6224	B4
6225	A2
6226	A2
6227	C8
6228	C8
7100	D4
7101	D3
7131	B3
7132	D5
7150	D3
7160	B3
7204	B4
7205	A2
7206	D6
7208	C7
7210	C7
7211	C7
7230	C2
7252	C8
7253	C8
7301	C3
7402	A2
7422	C4
7451	B2
7452	B2
7454	C5
7455	D6
7456	D5
9010	A1
9011	B6
9012	D4
9013	D4
9014	C4
9015	C6
9016	B7
9017	C6
9018	C6
9019	D4
9020	D4
9021	D4
9291.	A2



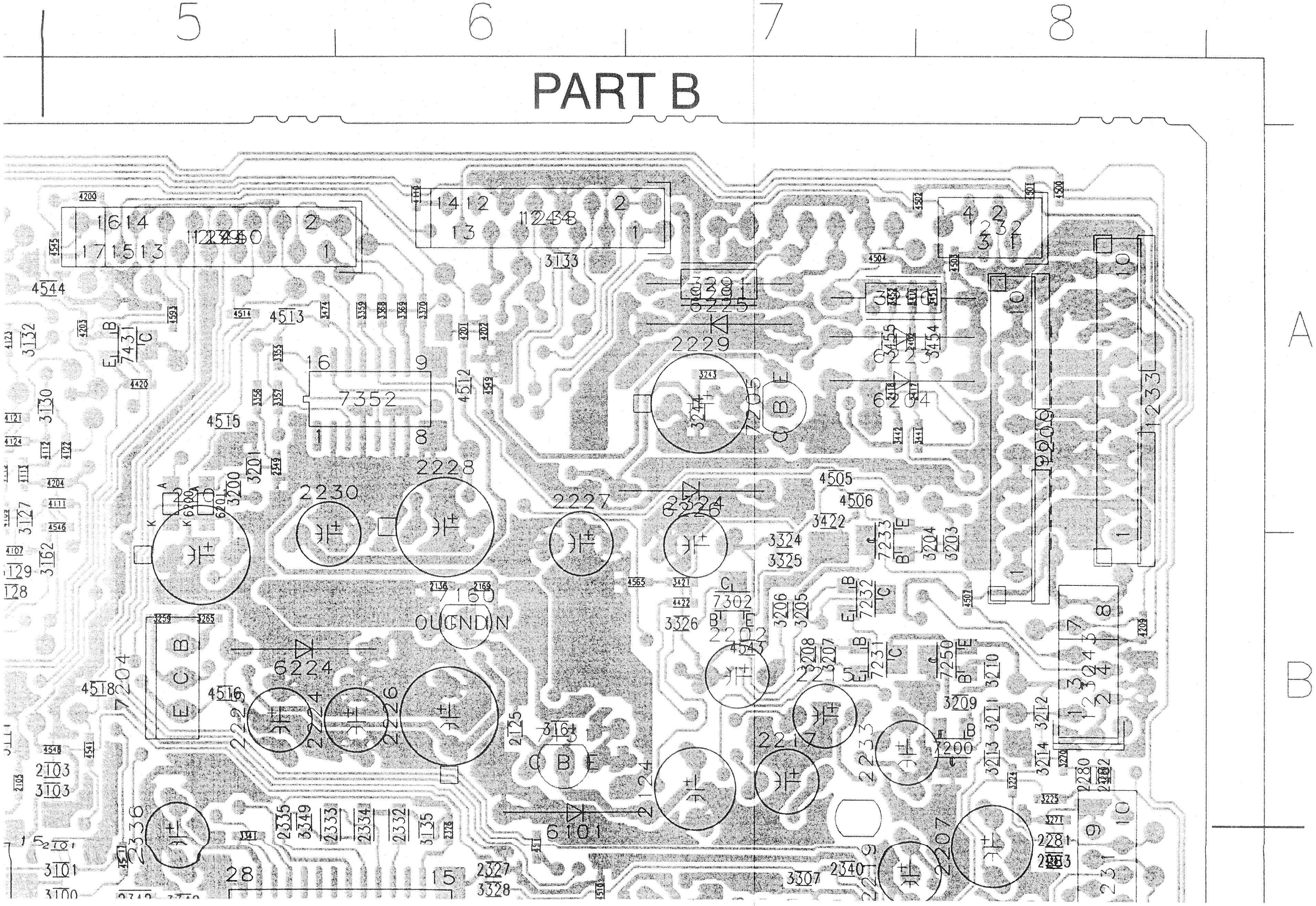
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list

1
2
3
4
5
6
7
8
A
B
C
D
PART E
PART F
PART G
PART H
1181
1182
1183
1184
1186
1187
7402
7422
7230
7210
7160
7131
7204
2201
2228
2241
2240
5202
3290
3238
3480
3472
9010
9011
9016
9017
9018
9019
9020
9021
9012
9013
9291
3139 113 3500 pt5 dd wk318

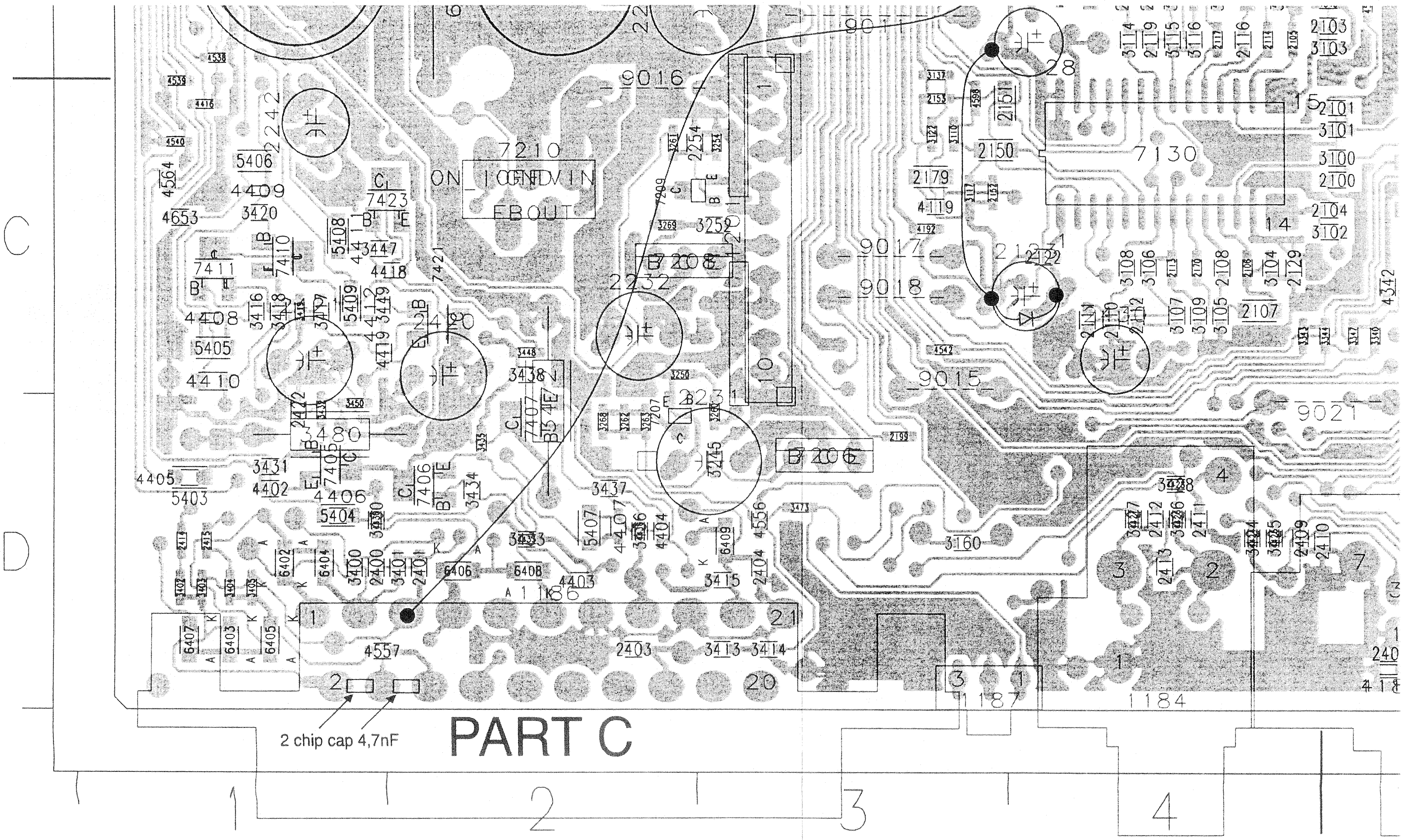
BOTTOM VIEW - PART A


1
2
3
4
A
B
PART A
5202
5204
6203
2241
2240
2242
7210
9016
9011
2254
1100
2120
2128
7130
2143
2139
2180
4120
2118
3113
2115
3111
2116
2103
3103
2101
3101
3100
2150
2151
4544
4545
4200
4203
4114
3131
3132
3130
4121
4124
4204
4111
4546
4107
4108
3127
3129
3128
3162
4519
4518
4520
4579
4208
4206
3202
4207
4205
4415
4538
4539
4416
4540
3137
2153
4593

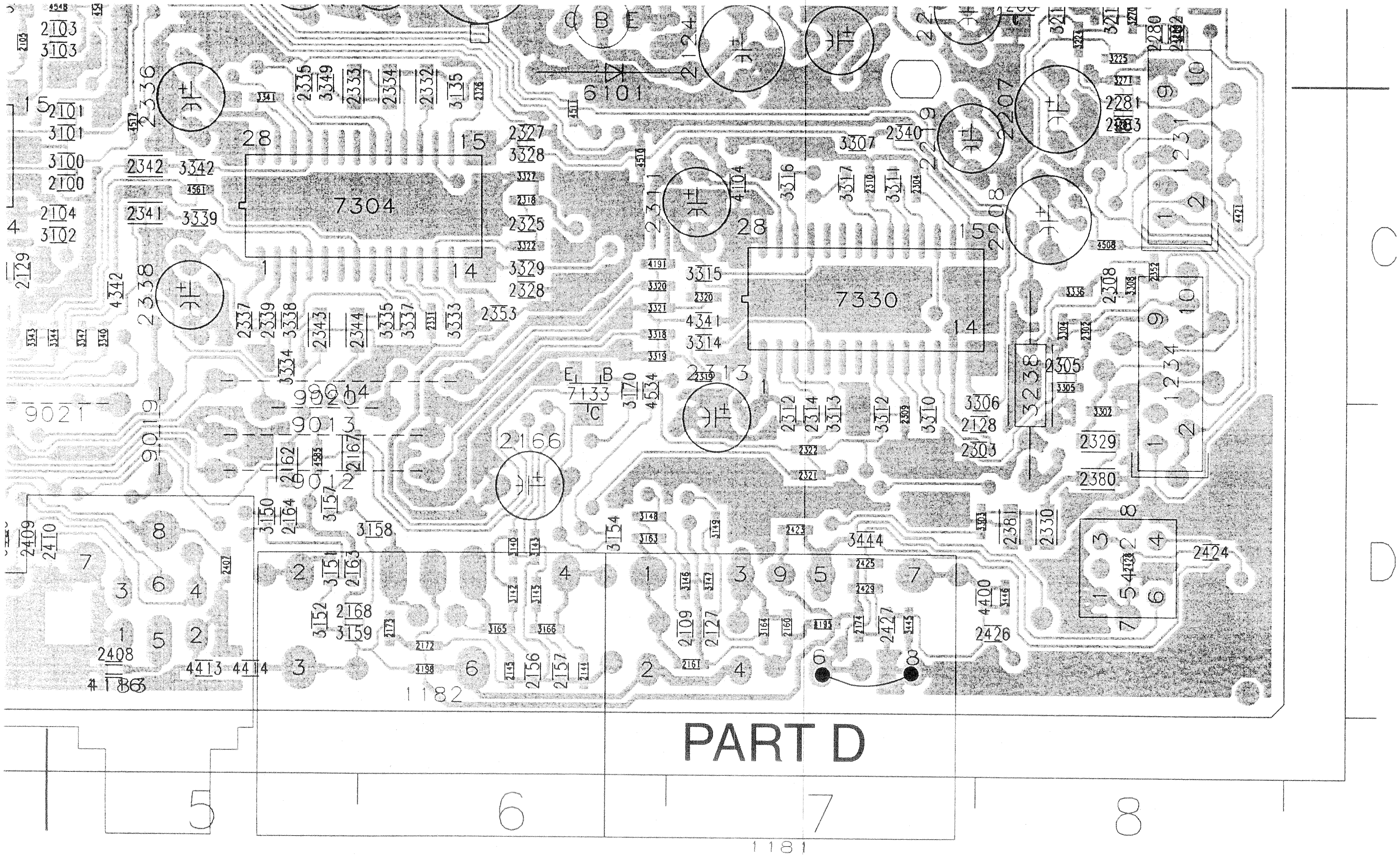
BOTTOM VIEW - PART B


5
6
7
8
PART B
A
B
4200
4545
4544
4123
3132
7431
4203
4593
4420
3130
4121
4124
4112
4122
4113
4204
4111
3127
4546
4107
3162
3129
3128
4514
4513
3474
3359
3368
3369
3370
3355
3356
3357
7352
16
9
1
8
4515
4201
4202
4512
4549
3201
2349
3200
6200
6201
2230
2228
3133
2229
3243
3244
7205
2227
2226
2225
6225
4502
4501
4500
4504
4503
3455
3454
6204
3442
3441
4505
4506
3422
3324
3325
7233
3204
3203
9206
2233
4565
3421
4422
7302
3326
2202
4547
3206
3205
7232
3208
3207
7231
7250
3210
3209
3211
3212
3213
3214
7200
2217
2124
2125
3163
6101
2136
2169
7160
3259
3265
7204
6224
4518
4516
2229
2224
2226
4548
2103
3103
4541
2105
2336
2101
3101
3100
2335
3349
2333
2334
2332
3135
2327
3328
3307
2340
2207
2280
2281
2283
3225
3271
3224
3220
4209
28
15
4507
1
2
10
9

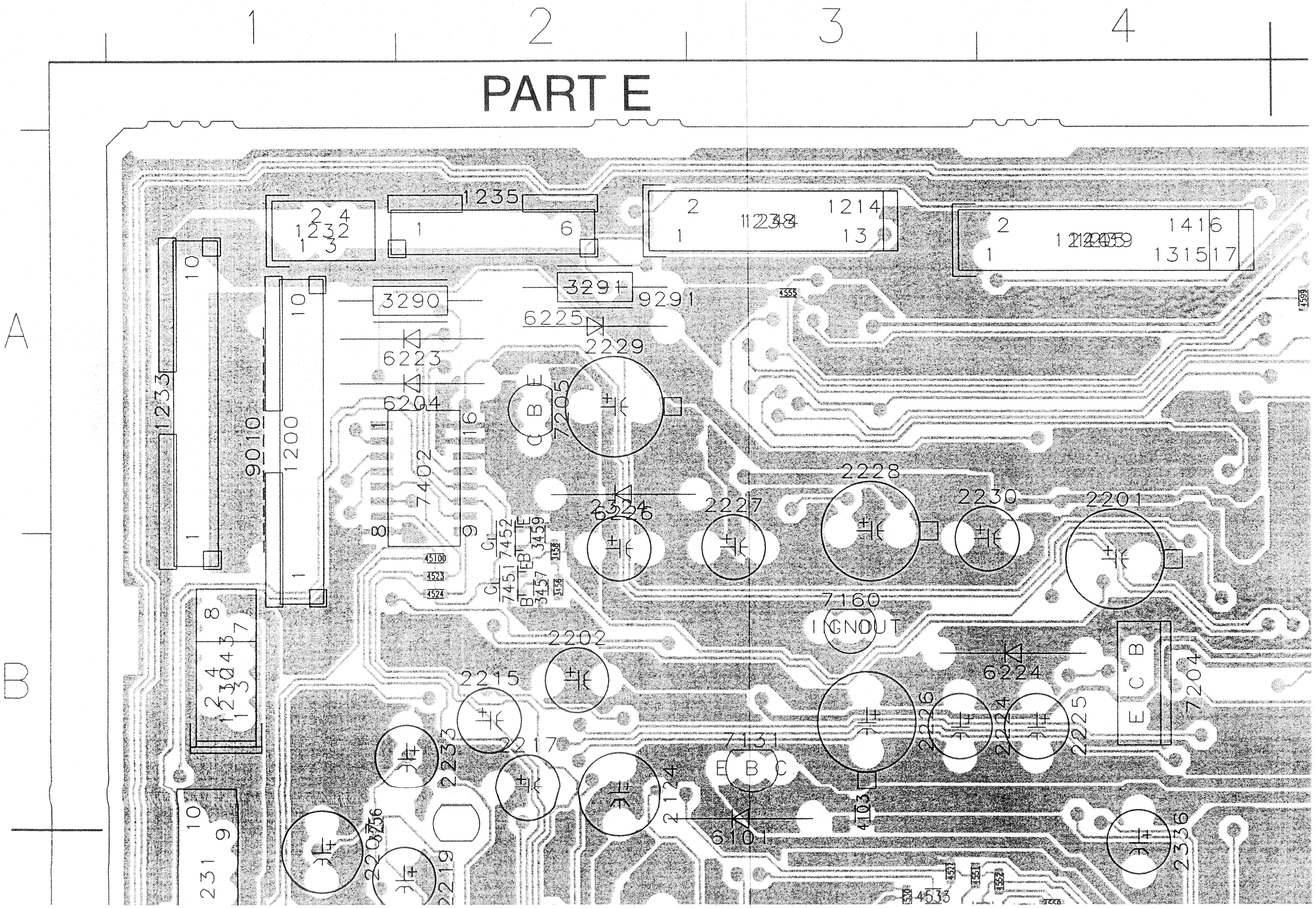
BOTTOM VIEW - PART C


C
D
1
2
3
4
7210
ON_IOFF GND VIN
FBOUT
7130
9016
9017
9018
9015
9021
9011
2242
5406
4409
3420
4653
4564
7411
7410
7423
5408
3447
4418
5409
5405
4408
4410
3416
3480
7405
3431
4402
4405
5403
4406
5404
7406
3434
3437
5407
4404
2232
7207
3245
2254
3252
3269
3250
B7208
B7206
2150
2179
4119
4192
4542
2101
3101
3100
2100
2104
3102
2103
3103
2107
3160
3428
2412
2411
2413
2409
2410
6402
6404
3400
2400
3401
2401
6406
6408
3433
4403
3415
2404
6409
4556
1186
6407
6403
6405
4557
2403
3413
3414
1187
1184
4342
2 chip cap 4,7nF
PART C

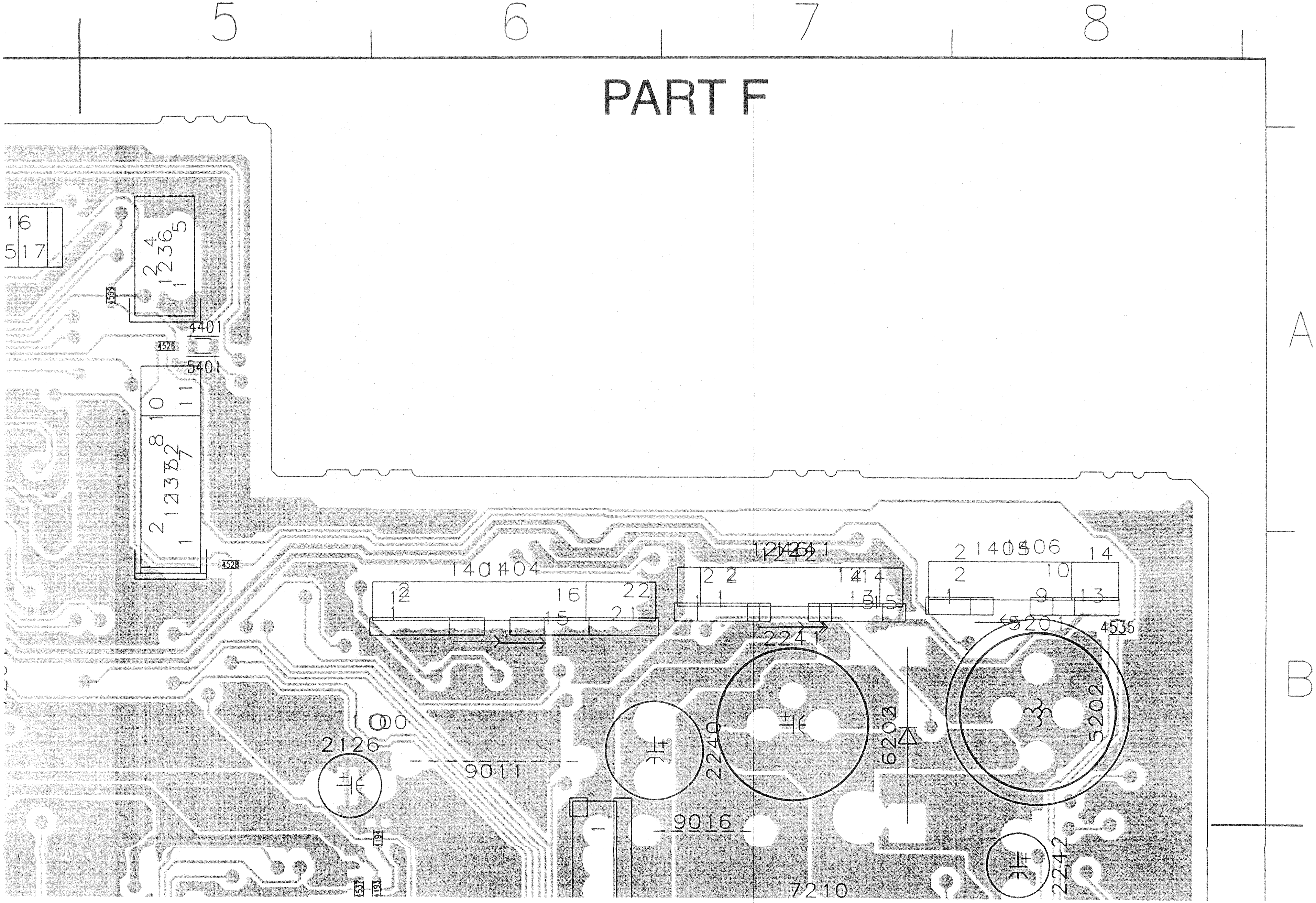
BOTTOM VIEW - PART D


2103
3103
2101
3101
3100
2100
2104
3102
2129
2336
2338
4342
2342
3342
2341
3339
2335
3349
2333
2334
2332
3135
7304
28
15
1
14
2327
3328
2325
3329
2328
2353
2337
2339
3338
2343
2344
3335
3337
3333
3334
9021
9019
9020
9014
9013
9012
2162
2167
2166
3150
2164
3157
3158
2409
2410
2408
4413
4414
4186
3151
2163
3152
2168
3159
2172
4198
3165
3166
2156
2157
1182
6101
Q
B
E
2124
2311
4104
3307
2340
2219
2207
2208
2281
2283
3316
3317
3311
7330
3315
4341
3314
2313
E
B
7133
C
3170
4534
2312
2314
3313
3312
3310
3306
2128
2303
3238
2305
2308
2329
2380
2381
2330
3148
3163
3154
3444
2425
2429
2427
2109
2127
4400
2426
2424
2231
2423
1
2
3
4
5
6
7
8
9
10
C
D
PART D
5
6
7
8
1181

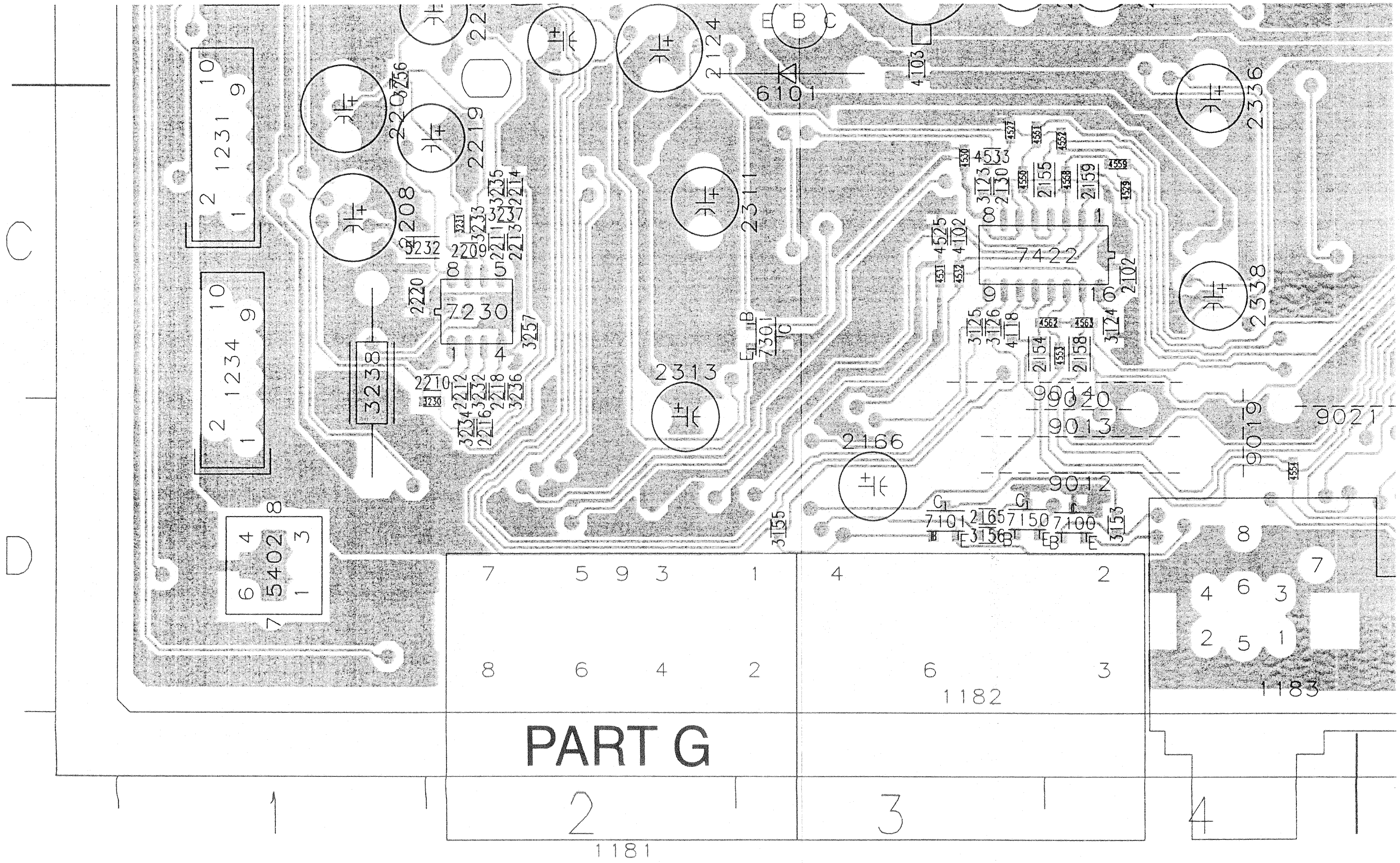
BOTTOM VIEW - PART E


1
2
3
4
A
B
PART E
1235
1232
1214
13
1416
1315
17
1233
9010
1200
3290
3291
9291
6225
6223
6204
2229
7205
7402
2228
2230
2201
2227
2324
6226
7452
3459
7451
3457
3158
3156
4523
4524
4555
4599
7160
IGNOUT
2202
6224
7204
2215
2217
2233
2226
2224
2225
7131
2124
6101
4103
2336
2219
4533

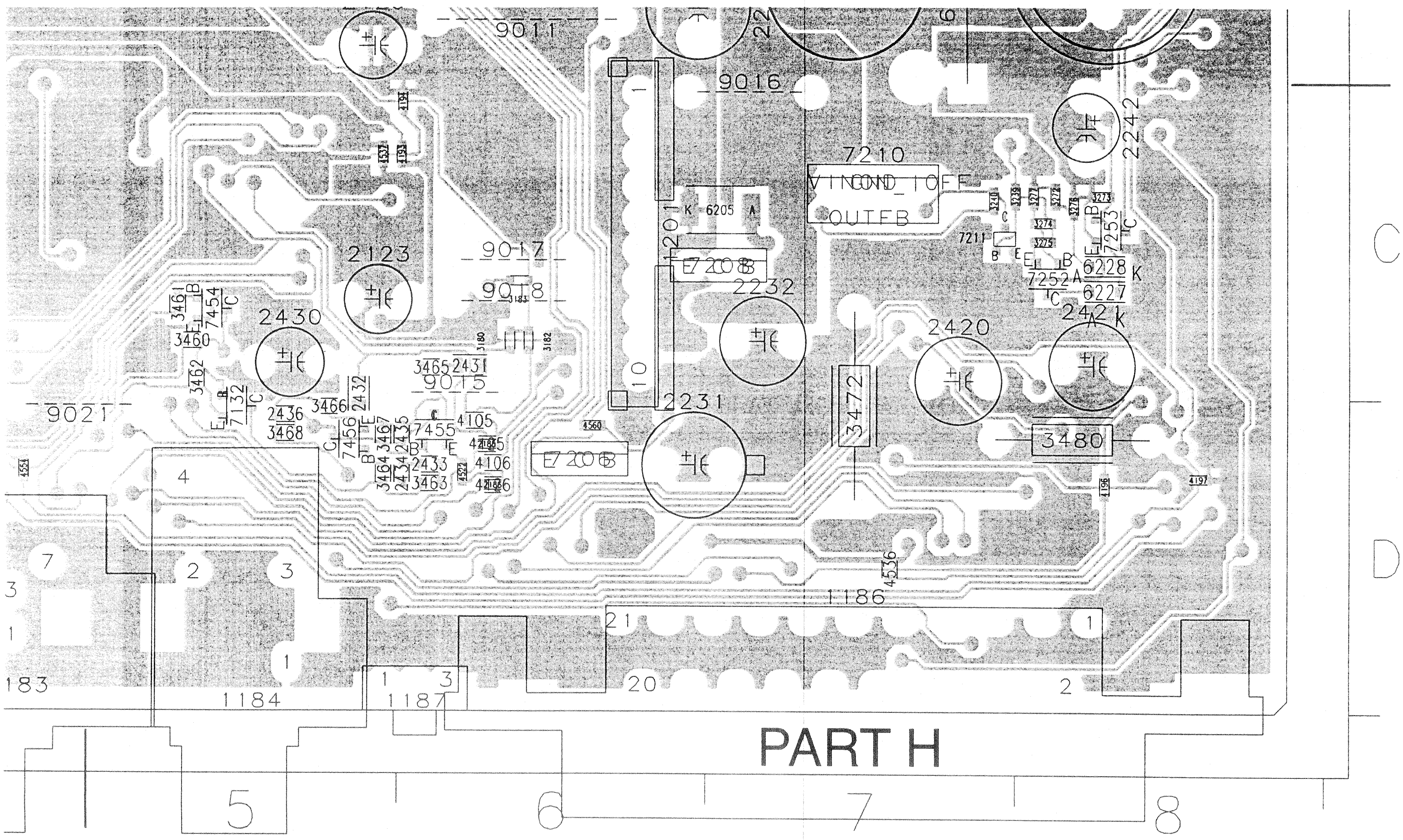
BOTTOM VIEW - PART F


5
6
7
8
PART F
A
B
4599
4401
4526
5401
4528
1401
1404
1406
1405
4535
5201
2241
2240
6203
5202
2126
1100
9011
9016
7210
2242
4194
4537

BOTTOM VIEW - PART G


C
D
1231
1234
5402
3238
3232
7230
2208
2219
2220
3257
2210
3230
2311
2313
2124
6101
4103
7301
2166
3155
7101
2165
3156
7150
7100
3153
7422
4533
2155
2159
2130
3123
4102
4525
2102
3124
3125
3126
4118
2154
2158
2336
2338
9014
9020
9013
9012
9019
9021
1181
1182
1183
PART G
1
2
3
4

BOTTOM VIEW - PART H


9011
9016
22
6
2242
7210
VINCOND_IOFF
OUTFB
1
1201
K 6205 A
3241
3239
3277
3272
3276
3273
3274
3275
7211
7253
B E C
E B
7252 A
C
6228 K
6227
242 K
A
C
2123
9017
9018
3183
2232
E7208
4194
4537
4193
3461
7454
3460
2430
3180
3182
3465 2431
9015
3462
7132
10
2231
2420
3472
9021
2436
3468
3466
2432
7456
3467
2435
7455
4105
4185
4106
4186
3464
2434
2433
3463
4327
4560
E7206
3480
4554
4196
4197
4
7
2
3
3
1
1
183
1184
1187
1 3
4536
1186
21
1
20
2
C
D
PART H
5
6
7
8

RESISTORS

3125	4822 051 30271	270R 5% 0,062W	
3126	4822 051 30271	270R 5% 0,062W	
3127	4822 051 30102	1k 5% 0,062W	
3128	4822 117 12891	220k 1% ERJ3E	
3129	4822 117 12891	220k 1% ERJ3E	
3130	4822 051 30101	100R 5% 0,062W	
3131	4822 051 30101	100R 5% 0,062W	
3132	4822 051 30101	100R 5% 0,062W	
3133	4822 051 30101	100R 5% 0,062W	
3135	4822 051 30562	5k6 5% 0,063W	
3137	4822 051 30103	10k 5% 0,062W	
3140	4822 117 12925	47k 1% 0,063W	
3142	4822 051 30332	3k3 5% 0,062W	
3143	4822 117 12925	47k 1% 0,063W	
3145	4822 051 30332	3k3 5% 0,062W	
3146	4822 117 12925	47k 1% 0,063W	
3147	4822 117 12925	47k 1% 0,063W	
3148	4822 051 30332	3k3 5% 0,062W	
3149	4822 051 30332	3k3 5% 0,062W	
3150	4822 051 30102	1k 5% 0,062W	
3151	4822 051 30471	470R 5% 0,062W	
3152	4822 117 12925	47k 1% 0,063W	
3153	4822 051 30222	2k2 5% 0,062W	
3154	4822 117 12925	47k 1% 0,063W	
3155	4822 051 30103	10k 5% 0,062W	
3156	4822 051 30222	2k2 5% 0,062W	
3157	4822 051 30102	1k 5% 0,062W	
3158	4822 051 30471	470R 5% 0,062W	
3159	4822 117 12925	47k 1% 0,063W	
3160	4822 051 30222	2k2 5% 0,062W	non-Kara
3160	4822 051 30332	3k3 5% 0,062W	non-Kara/Scart
3160	4822 051 30472	4k7 5% 0,062W	Kara
3161	4822 051 30151	150R 5% 0,062W	
3162	4822 051 30102	1k 5% 0,062W	
3163	4822 051 30332	3k3 5% 0,062W	
3164	4822 051 30332	3k3 5% 0,062W	
3165	4822 051 30332	3k3 5% 0,062W	
3166	4822 051 30332	3k3 5% 0,062W	
3170	4822 117 12925	47k 1% 0,063W	
3180	4822 051 30103	10k 5% 0,062W	
3182	4822 051 30103	10k 5% 0,062W	
3183	4822 051 30103	10k 5% 0,062W	
3200	4822 117 13632	100k 1% 0,62W	
3201	4822 117 13632	100k 1% 0,62W	
3202	4822 051 30103	10k 5% 0,062W	
3203	4822 051 30103	10k 5% 0,062W	
3204	4822 051 30103	10k 5% 0,062W	
3205	4822 051 30102	1k 5% 0,062W	
3206	4822 051 30562	5k6 5% 0,063W	
3207	4822 051 30472	4k7 5% 0,062W	
3208	4822 051 30472	4k7 5% 0,062W	
3209	4822 051 30102	1k 5% 0,062W	
3210	4822 051 30102	1k 5% 0,062W	
3211	4822 051 30339	33R 5% 0,062W	
3212	4822 051 30339	33R 5% 0,062W	
3213	4822 051 30479	47R 5% 0,062W	
3214	4822 051 30479	47R 5% 0,062W	
3215	4822 051 30102	1k 5% 0,062W	
3224	4822 051 30102	1k 5% 0,062W	
3225	4822 051 30102	1k 5% 0,062W	
3230	4822 051 30273	27k 5% 0,062W	
3231	4822 051 30273	27k 5% 0,062W	
3232	4822 051 30123	12k 5% 0,062W	
3233	4822 051 30682	6k8 5% 0,062W	
3234	4822 051 30221	220R 5% 0,062W	
3235	4822 051 30221	220R 5% 0,062W	
3236	4822 051 30682	6k8 5% 0,062W	
3237	4822 051 30123	12k 5% 0,062W	
3238	4822 052 10109	10R 5% 0,33W	
3239	4822 051 30103	10k 5% 0,062W	
3240	4822 117 12925	47k 1% 0,063W	
3245	4822 051 30562	5k6 5% 0,063W	
3250	4822 117 12925	47k 1% 0,063W	
3252	4822 051 30562	5k6 5% 0,063W	
3254	4822 117 12925	47k 1% 0,063W	
3256	4822 051 30472	4k7 5% 0,062W	
3257	4822 051 30472	4k7 5% 0,062W	
3259	4822 117 12902	8k2 1% 0,063W	
3260	4822 051 30103	10k 5% 0,062W	
3261	4822 051 30103	10k 5% 0,062W	
3262	4822 051 30102	1k 5% 0,062W	
3263	4822 051 30102	1k 5% 0,062W	
3265	4822 051 30471	470R 5% 0,062W	
3268	4822 051 30102	1k 5% 0,062W	
3269	4822 051 30221	220R 5% 0,062W	
3270	4822 051 30471	470R 5% 0,062W	
3271	4822 051 30471	470R 5% 0,062W	
3272	4822 051 30682	6k8 5% 0,062W	
3273	4822 051 30103	10k 5% 0,062W	
3274	4822 051 30682	6k8 5% 0,062W	
3275	4822 051 30689	68R 5% 0,063W	
3276	4822 051 30102	1k 5% 0,062W	
3277	4822 117 12925	47k 1% 0,063W	
3290	4822 052 10228	2R2 5% 0,33W	
3302	4822 051 30223	22k 5% 0,062W	
3303	4822 117 11817	1k2 1% 1/16W	
3304	4822 051 30222	2k2 5% 0,062W	
3305	4822 051 30689	68R 5% 0,063W	
3306	4822 051 30102	1k 5% 0,062W	
3307	4822 051 30102	1k 5% 0,062W	
3308	4822 051 30222	2k2 5% 0,062W	
3310	4822 051 30102	1k 5% 0,062W	
3311	4822 051 30102	1k 5% 0,062W	
3312	4822 051 30102	1k 5% 0,062W	

3313	4822 051 30102	1k 5% 0,062W	
3314	4822 051 30102	1k 5% 0,062W	
3315	4822 051 30102	1k 5% 0,062W	
3316	4822 051 30102	1k 5% 0,062W	
3317	4822 051 30102	1k 5% 0,062W	
3318	4822 051 30682	6k8 5% 0,062W	
3319	4822 051 30103	10k 5% 0,062W	
3320	4822 051 30682	6k8 5% 0,062W	
3321	4822 051 30103	10k 5% 0,062W	
3322	4822 051 30689	68R 5% 0,063W	
3324	4822 051 30102	1k 5% 0,062W	
3325	4822 051 30102	1k 5% 0,062W	
3326	4822 051 30102	1k 5% 0,062W	
3327	4822 051 30222	2k2 5% 0,062W	
3328	4822 051 30102	1k 5% 0,062W	
3329	4822 051 30102	1k 5% 0,062W	
3333	4822 051 30102	1k 5% 0,062W	
3334	4822 051 30102	1k 5% 0,062W	
3335	4822 051 30102	1k 5% 0,062W	
3336	4822 051 30689	68R 5% 0,063W	
3337	4822 051 30102	1k 5% 0,062W	
3338	4822 051 30102	1k 5% 0,062W	
3339	4822 051 30102	1k 5% 0,062W	
3340	4822 051 30682	6k8 5% 0,062W	
3341	4822 051 30103	10k 5% 0,062W	Twin-SW
3342	4822 051 30102	1k 5% 0,062W	
3343	4822 051 30682	6k8 5% 0,062W	
3347	4822 051 30103	10k 5% 0,062W	
3349	4822 117 12902	8k2 1% 0,063W	
3355	4822 051 30681	680R 5% 0,062W	
3356	4822 051 30101	100R 5% 0,062W	
3357	4822 117 13632	100k 1% 0,62W	
3359	4822 117 12925	47k 1% 0,063W	
3368	4822 051 30101	100R 5% 0,062W	
3369	4822 051 30101	100R 5% 0,062W	
3370	4822 051 30101	100R 5% 0,062W	
3400	4822 051 30471	470R 5% 0,062W	Scart
3401	4822 051 30471	470R 5% 0,062W	Scart
3402	4822 117 12902	8k2 1% 0,063W	Scart
3403	4822 051 30223	22k 5% 0,062W	Scart
3404	4822 117 12902	8k2 1% 0,063W	Scart
3405	4822 051 30223	22k 5% 0,062W	Scart
3411	4822 051 30271	270R 5% 0,062W	
3413	4822 051 30479	47R 5% 0,063W	Scart
3414	4822 051 30339	33R 5% 0,063W	Scart
3415	4822 051 30689	68R 5% 0,063W	Scart
3416	4822 051 30101	100R 5% 0,062W	Scart
3417	4822 117 11817	1k2 5% 0,062W	Scart
3418	4822 051 30689	68R 5% 0,063W	Scart
3419	4822 117 11817	1k2 1% 1/16W	Scart
3420	4822 051 30101	100R 5% 0,062W	Scart
3424	4822 051 30689	68R 5% 0,063W	
3425	4822 051 30689	68R 5% 0,063W	
3426	4822 051 30689	68R 5% 0,063W	
3427	4822 051 30689	68R 5% 0,063W	
3428	4822 051 30689	68R 5% 0,063W	
3430	4822 051 30689	68R 5% 0,063W	Scart
3431	4822 051 30101	100R 5% 0,062W	
3432	4822 117 11817	1k2 1% 1/16W	
3433	4822 051 30689	68R 5% 0,063W	Scart
3434	4822 051 30101	100R 5% 0,062W	
3435	4822 117 11817	1k2 1% 1/16W	
3437	4822 051 30101	100R 5% 0,062W	Scart
3438	4822 051 30222	2k2 5% 0,062W	Scart
3441	4822 051 30471	470R 5% 0,062W	
3442	4822 051 30471	470R 5% 0,062W	
3444	4822 051 30339	33R 5% 0,062W	
3445	4822 051 30151	150R 5% 0,062W	
3447	4822 051 30101	100R 5% 0,062W	
3448	4822 117 11817	1k2 1% 1/16W	
3449	4822 051 30101	100R 5% 0,062W	
3450	4822 117 11817	1k2 1% 1/16W	
3451	4822 051 30153	15k 5% 0,062W	
3452	4822 051 30153	15k 5% 0,062W	
3454	4822 117 12925	47k 1% 0,063W	
3455	4822 117 12925	47k 1% 0,063W	
3456	4822 051 30153	15k 5% 0,062W	
3457	4822 117 12925	47k 1% 0,063W	
3458	4822 051 30153	15k 5% 0,062W	
3459	4822 117 12925	47k 1% 0,063W	
3460	4822 051 30103	10k 5% 0,062W	Scart
3461	4822 117 12925	47k 1% 0,063W	Scart
3462	4822 117 12925	47k 1% 0,063W	Scart
3463	4822 051 30222	2k2 5% 0,062W	Scart
3464	4822 051 30222	2k2 5% 0,062W	Scart
3465	4822 051 30102	1k 5% 0,062W	Scart
3466	4822 051 30102	1k 5% 0,062W	Scart
3467	4822 117 12925	47k 1% 0,063W	Scart
3468	4822 117 12925	47k 1% 0,063W	Scart
3472	4822 052 10478	4R7 5% 0,33W	
3473	4822 051 30103	10k 5% 0,062W	
3474	4822 051 30103	10k 5% 0,062W	
3480	4822 052 10478	4R7 5% 0,33W	
4103	4822 051 30008	0R Jumper 0603	
4104	4822 051 30008	0R Jumper 0603	
4107	4822 051 30008	0R Jumper 0603	
4109	4822 051 30008	0R Jumper 0603	
4111	4822 051 30008	0R Jumper 0603	
4112	4822 051 30008	0R Jumper 0603	
4114	4822 051 30008	0R Jumper 0603	
4116	4822 051 30008	0R Jumper 0603	
4121	4822 051 30008	0R Jumper 0603	
4123	4822 051 30008	0R Jumper 0603	
4191	4822 051 30008	0R Jumper 0603	

MISCELLANEOUS

1181	2422 026 05399	Socket Aux-in/Digital-In/Out	
1182	4822 265 11151	Socket TV-in/Line-out	
1183	2422 033 00468	Socket CVBS/S-Video	
1184	2422 026 05342	Socket Pr/Pb/Y	non-Scart
1186	2422 025 12352	Scart Connector	Scart
1187	2422 127 00476	P-Scan Switch	P-scan
1230	4822 267 10733	Flex Socket 4P	non-Kara
1231	4822 267 10729	Flex Socket 10P	
1232	4822 267 10733	Flex Socket 4P	
1234	4822 267 10729	Flex Socket 10P	
1236	4822 267 10954	Flex Socket 5P	
1237	4822 265 11515	Flex Socket 8P	
1238	4822 267 10738	Flex Socket 13P	
1240	4822 267 51255	Flex Socket 14P	
1242	2422 025 16591	Flex Socket 13P	
1243	4822 265 11515	Flex Socket 8P	Kara
1401	2422 025 16525	Flex Socket 16P	non-Kara
1401	2422 025 18239	Flex Socket 18P	Kara
1405	2422 025 16587	Flex Socket 10P	

CAPACITORS

2100	3198 016 31020	1nF 25V	
2101	3198 016 31020	1nF 25V	
2102	2238 586 59812	100nF +80/-20% 50V	
2103	2020 552 94427	100pF 5% 50V	
2104	2020 552 94427	100pF 5% 50V	
2105	3198 017 44740	470nF 10V	
2106	3198 017 44740	470nF 10V	
2107	2020 552 96327	330nF 10% 16V	
2108	4822 126 13879	220nF +80/-20% 16V	
2109	2020 552 94427	100pF 5% 50V	
2110	5322 126 11579	3,3nF 10% 63V	
2111	3198 016 31020	1nF 25V	
2112	5322 126 11583	10nF 10% 50V	
2113	3198 017 44740	470nF 10V	
2114	3198 017 44740	470nF 10V	
2115	2020 552 96327	330nF 10% 16V	
2116	4822 126 13879	220nF +80/-20% 16V	
2117	4822 126 14238	2,2nF 50V	
2118	5322 126 11579	3,3nF 10% 63V	
2119	3198 016 31020	1nF 25V	
2120	5322 126 11583	10nF 10% 50V	
2121	3198 017 44740	470nF 10V	
2122	2238 916 15641	22nF 10% 25V	
2123	4822 124 81151	22uF 50V	
2124	4822 124 40196	220uF 20% 16V	
2125	4822 126 14238	2,2nF 50V	
2126	4822 124 40433	47uF 20% 25V	
2127	2020 552 94427	100pF 5% 50V	
2128	2020 552 94427	100pF 5% 50V	
2129	2238 586 59812	100nF +80/-20% 50V	
2130	2238 586 59812	100nF +80/-20% 50V	
2139	2238 586 59812	100nF +80/-20% 50V	
2143	2238 586 59812	100nF +80/-20% 50V	
2144	4822 126 13956	68pF 5% 63V	
2145	4822 126 13956	68pF 5% 63V	
2150	4822 126 14043	1uF +80/-20% 16V	
2151	4822 126 14043	1uF +80/-20% 16V	
2152	3198 016 31020	1nF 25V	
2153	3198 016 31020	1nF 25V	
2154	4822 126 14043	1uF +80/-20% 16V	
2155	4822 126 14043	1uF +80/-20% 16V	
2156	2020 552 94427	100pF 5% 50V	
2157	2020 552 94427	100pF 5% 50V	
2160	4822 126 13956	68pF 5% 63V	
2161	4822 126 13956	68pF 5% 63V	
2162	4822 126 14043	1uF +80/-20% 16V	
2163	3198 016 31020	1nF 25V	
2164	3198 016 31020	1nF 25V	
2165	3198 016 31020	1nF 25V	
2166	4822 124 40769	4,7uF 20% 100V	
2167	4822 126 14043	1uF +80/-20% 16V	
2168	3198 016 31020	1nF 25V	
2170	4822 126 14238	2,2nF 50V	
2172	3198 017 34730	47nF 16V	
2173	3198 017 34730	47nF 16V	
2174	3198 017 34730	47nF 16V	
2199	3198 017 41050	1uF 10V	Kara
2201	4822 124 40184	1000uF 20% 10V	
2202	4822.124 40248	10uF 20% 63V	
2207	4822 124 41751	47uF 20% 50V	
2208	4822 124 41751	47uF 20% 50V	
2209	4822 126 14508	180pF 5% 50V	
2210	4822 126 14508	180pF 5% 50V	
2211	4822 126 13881	470pF 5% 50V	
2212	4822 126 13881	470pF 5% 50V	
2213	2020 552 94427	100pF 5% 50V	
2214	3198 016 31020	1nF 25V	
2215	4822 124 81151	22uF 50V	
2216	3198 016 31020	1nF 25V	
2217	4822 124 81151	22uF 50V	
2218	2020 552 94427	100pF 5% 50V	
2219	4822 124 40433	47uF 20% 25V	
2220	2238 916 15641	22nF 10% 25V	
2224	4822 124 81151	22uF 50V	
2225	4822 124 81151	22uF 50V	
2226	4822 124 40255	100uF 20% 63V	
2227	4822 124 81151	22uF 50V	
2231	4822 124 80791	470uF 20% 16V	
2232	4822 124 40196	220uF 20% 16V	
2233	4822 124 41584	100uF 20% 10V	
2240	2020 012 93583	100uF 20% 25V	
2241	3198 026 51020	1000uF 20% 50V	
2242	4822 124 40433	47uF 20% 25V	

2254	3198 017 44740	470nF 10V	
2280	3198 017 44740	470nF 10V	
2281	3198 017 44740	470nF 10V	
2282	3198 017 44740	470nF 10V	
2283	3198 017 44740	470nF 10V	
2302	3198 017 44740	470nF 10V	
2303	2238 586 59812	100nF +80/-20% 50V	
2304	3198 017 44740	470nF 10V	
2305	2020 552 94427	100pF 5% 50V	
2308	2020 552 94427	100pF 5% 50V	
2309	4822 126 13193	4,7nF 10% 63V	
2310	4822 126 13193	4,7nF 10% 63V	
2311	4822 124 40433	47uF 20% 25V	
2312	2238 916 15641	22nF 10% 25V	
2313	4822 124 40433	47uF 20% 25V	
2314	3198 016 31020	1nF 25V	
2318	3198 017 44740	470nF 10V	
2319	3198 017 44740	470nF 10V	
2320	3198 017 44740	470nF 10V	
2321	3198 017 44740	470nF 10V	
2322	3198 017 44740	470nF 10V	
2324	4822 124 12032	4,7uF 20% 50V	
2325	2020 552 94427	100pF 5% 50V	
2326	3198 017 44740	470nF 10V	
2327	2020 552 94427	100pF 5% 50V	
2328	2020 552 94427	100pF 5% 50V	
2329	2020 552 96684	470nF 10% 25V	
2330	3198 017 44740	470nF 10V	
2331	4822 126 13193	4,7nF 10% 63V	
2332	2020 552 96684	470nF 10% 25V	
2333	2020 552 96326	220nF 10% 16V	
2334	2222 780 15656	330nF 10% 16V	
2335	2020 552 94427	100pF 5% 50V	
2336	4822 124 40433	47uF 20% 25V	
2337	2238 916 15641	22nF 10% 25V	
2338	4822 124 40433	47uF 20% 25V	
2339	3198 016 31020	1nF 25V	
2340	2020 552 94427	100pF 5% 50V	
2341	4822 126 14043	1uF +80/-20% 16V	
2342	4822 126 14043	1uF +80/-20% 16V	Single-SW
2342	4822 126 13879	220nF +80/-20% 16V	Twin-SW
2343	4822 126 14043	1uF +80/-20% 16V	Single-SW
2343	2020 552 96684	470nF 10% 25V	Twin-SW
2344	4822 126 14043	1uF +80/-20% 16V	Single-SW
2344	2020 552 96684	470nF 10% 25V	Twin-SW
2349	2238 586 59812	100nF +80/-20% 50V	
2352	3198 017 44740	470nF 10V	
2353	2238 586 59812	100nF +80/-20% 50V	
2380	4822 126 14472	1uF 10% X7R 0805 10V	
2400	4822 126 13883	220pF 5% 50V	Scart
2401	4822 126 13883	220pF 5% 50V	Scart
2402	2238 586 59812	100nF +80/-20% 50V	
2403	3198 017 42230	22nF 50V	Scart
2404	4822 126 13883	220pF 5% 50V	Scart
2407	4822 126 13883	220pF 5% 50V	
2409	4822 126 13883	220pF 5% 50V	
2410	4822 126 13883	220pF 5% 50V	
2411	2020 552 94427	100pF 5% 50V	
2412	2020 552 94427	100pF 5% 50V	
2413	2020 552 94427	100pF 5% 50V	
2414	3198 017 41050	1uF 10V	Scart
2415	3198 017 41050	1uF 10V	Scart
2417	2020 552 94427	100pF 5% 50V	
2418	2020 552 94427	100pF 5% 50V	
2420	4822 124 40196	220uF 20% 16V	
2421	4822 124 40196	220uF 20% 16V	
2422	2238 586 59812	100nF +80/-20% 50V	
2423	4822 126 14249	560pF 10% 50V	
2424	2238 586 59812	100nF +80/-20% 50V	
2425	2238 586 59812	100nF +80/-20% 50V	
2426	5322 126 11583	10nF 10% 50V	
2427	4822 126 14508	180pF 5% 50V	
2428	4822 126 11785	47pF 5% 50V	
2429	4822 126 14241	330pF 50V	
2430	4822 124 40769	4,7uF 20% 100V	Scart
2431	4822 126 14043	1uF +80/-20% 16V	Scart
2432	4822 126 14043	1uF +80/-20% 16V	Scart
2433	3198 016 31020	1nF 25V	Scart
2434	3198 016 31020	1nF 25V	Scart
2435	3198 016 31020	1nF 25V	Scart
2436	3198 016 31020	1nF 25V	Scart

RESISTORS

3100	4822 051 30221	220R 5% 0,062W
3101	4822 051 30221	220R 5% 0,062W
3102	4822 051 30102	1k 5% 0,062W
3103	4822 051 30102	1k 5% 0,062W
3104	4822 051 30562	5k6 5% 0,063W
3105	4822 117 12902	8k2 1% 0,063W
3106	4822 051 30562	5k6 5% 0,063W
3107	4822 051 30183	18k 5% 0,062W
3108	4822 051 30103	10k 5% 0,062W
3109	4822 117 12925	47k 1% 0,063W
3110	4822 051 30682	6k8 5% 0,062W
3111	4822 051 30562	5k6 5% 0,063W
3112	4822 117 12902	8k2 1% 0,063W
3113	4822 051 30183	18k 5% 0,062W
3114	4822 051 30103	10k 5% 0,062W
3115	4822 051 30562	5k6 5% 0,063W
3116	4822 117 12925	47k 1% 0,063W
3117	4822 051 30103	10k 5% 0,062W
3122	4822 051 30682	6k8 5% 0,062W
3123	4822 051 30271	270R 5% 0,062W
3124	4822 051 30271	270R 5% 0,062W

RESISTORS

4192	4822 051 30008	0R Jumper 0603	
4195	4822 051 30008	0R Jumper 0603	
4200	4822 051 30008	0R Jumper 0603	
4201	4822 051 30008	0R Jumper 0603	
4205	4822 051 30008	0R Jumper 0603	
4206	4822 051 30008	0R Jumper 0603	
4209	4822 051 30008	0R Jumper 0603	non-Kara
4341	4822 051 30008	0R Jumper 0603	
4342	4822 051 30008	0R Jumper 0603	
4400	4822 051 30008	0R Jumper 0603	
4404	4822 051 30008	0R Jumper 0603	Non-Scart
4405	4822 051 30008	0R Jumper 0603	
4406	4822 051 30008	0R Jumper 0603	
4407	4822 051 30008	0R Jumper 0603	
4408	4822 051 30008	0R Jumper 0603	Scart
4409	4822 051 30008	0R Jumper 0603	
4410	4822 051 30008	0R Jumper 0603	Non-Scart
4411	4822 051 30008	0R Jumper 0603	
4412	4822 051 30008	0R Jumper 0603	
4414	4822 051 30008	0R Jumper 0603	Scart
4415	4822 051 30008	0R Jumper 0603	
4416	4822 051 30008	0R Jumper 0603	
4420	4822 051 30008	0R Jumper 0603	Scart
4421	4822 051 30008	0R Jumper 0603	
4424	4822 051 30008	0R Jumper 0603	
4425	4822 051 30008	0R Jumper 0603	
4426	4822 051 30008	0R Jumper 0603	
4427	4822 051 30008	0R Jumper 0603	
4428	4822 051 30008	0R Jumper 0603	
4430	4822 051 30008	0R Jumper 0603	Scart
4433	4822 051 30008	0R Jumper 0603	Scart
4436	4822 051 30008	0R Jumper 0603	Scart
4500	4822 051 30008	0R Jumper 0603	
4501	4822 051 30008	0R Jumper 0603	
4502	4822 051 30008	0R Jumper 0603	
4503	4822 051 30008	0R Jumper 0603	
4504	4822 051 30008	0R Jumper 0603	
4505	4822 051 30008	0R Jumper 0603	
4506	4822 051 30008	0R Jumper 0603	
4507	4822 051 30008	0R Jumper 0603	
4508	4822 051 30008	0R Jumper 0603	
4509	4822 051 30008	0R Jumper 0603	
4510	4822 051 30008	0R Jumper 0603	
4511	4822 051 30008	0R Jumper 0603	
4512	4822 051 30008	0R Jumper 0603	
4513	4822 051 30008	0R Jumper 0603	
4514	4822 051 30008	0R Jumper 0603	
4515	4822 051 30008	0R Jumper 0603	
4516	4822 051 30008	0R Jumper 0603	
4517	4822 051 30008	0R Jumper 0603	
4518	4822 051 30008	0R Jumper 0603	
4519	4822 051 30008	0R Jumper 0603	
4520	4822 051 30008	0R Jumper 0603	
4521	4822 051 30008	0R Jumper 0603	
4522	4822 051 30008	0R Jumper 0603	
4523	4822 051 30008	0R Jumper 0603	
4524	4822 051 30008	0R Jumper 0603	
4525	4822 051 30008	0R Jumper 0603	
4526	4822 051 30008	0R Jumper 0603	
4527	4822 051 30008	0R Jumper 0603	
4528	4822 051 30008	0R Jumper 0603	
4529	4822 051 30008	0R Jumper 0603	
4530	4822 051 30008	0R Jumper 0603	
4531	4822 051 30008	0R Jumper 0603	
4532	4822 051 30008	0R Jumper 0603	
4533	4822 051 30008	0R Jumper 0603	
4534	4822 051 30008	0R Jumper 0603	
4535	4822 051 30008	0R Jumper 0603	
4536	4822 051 30008	0R Jumper 0603	
4537	4822 051 30008	0R Jumper 0603	
4538	4822 051 30008	0R Jumper 0603	
4539	4822 051 30008	0R Jumper 0603	
4540	4822 051 30008	0R Jumper 0603	
4541	4822 051 30008	0R Jumper 0603	
4542	4822 051 30008	0R Jumper 0603	
4543	4822 051 30008	0R Jumper 0603	
4544	4822 051 30008	0R Jumper 0603	
4545	4822 051 30008	0R Jumper 0603	
4546	4822 051 30008	0R Jumper 0603	
4547	4822 051 30008	0R Jumper 0603	
4548	4822 051 30008	0R Jumper 0603	
4549	4822 051 30008	0R Jumper 0603	
4550	4822 051 30008	0R Jumper 0603	
4551	4822 051 30008	0R Jumper 0603	
4552	4822 051 30008	0R Jumper 0603	
4553	4822 051 30008	0R Jumper 0603	
4554	4822 051 30008	0R Jumper 0603	
4555	4822 051 30008	0R Jumper 0603	
4556	4822 051 30008	0R Jumper 0603	
4557	4822 051 30008	0R Jumper 0603	
4558	4822 051 30008	0R Jumper 0603	
4559	4822 051 30008	0R Jumper 0603	
4560	4822 051 30008	0R Jumper 0603	
4564	4822 051 30008	0R Jumper 0603	
4579	4822 051 30008	0R Jumper 0603	
4585	4822 051 30008	0R Jumper 0603	
4593	4822 051 30008	0R Jumper 0603	
4598	4822 051 30008	0R Jumper 0603	
4599	4822 051 30008	0R Jumper 0603	
4653	4822 051 30008	0R Jumper 0603	

COILS & FILTERS

5201	2422 536 00548	Fixed Ind, 100uH 15%	
5232	4822 157 10586	2,2uH 10%	
5401	4822 157 10586	2,2uH 10%	
5402	4822 157 70601	Inductor 100uH	

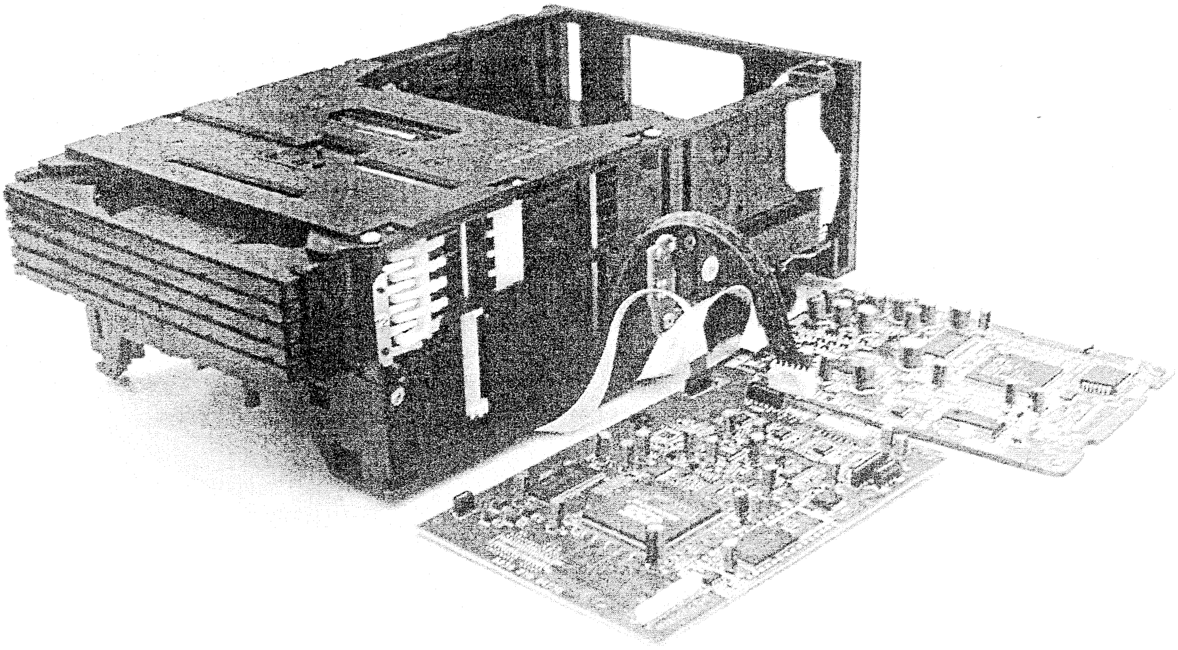
DIODES

6101	4822 130 61219	BZX79-B10	
6200	4822 130 11397	BAS316	
6201	4822 130 11397	BAS316	
6202	4822 130 10871	SBYV27-200	
6205	9322 128 70685	SS14	
6223	4822 130 31878	1N4003G	
6224	4822 130 34278	BZX79-B6V8	
6225	4822 130 31878	1N4003G	
6227	4822 130 11397	BAS316	
6228	4822 130 11397	BAS316	

TRANSISTORS & INTEGRATED CIRCUITS

7100	5322 130 60159	BC847B	
7101	4822 130 60373	BC857B	
7130	9322 150 74668	TDA7468D	
7131	4822 130 40959	BC547B	
7132	4822 130 60373	BC857B	Scart
7133	4822 130 42804	BC817-25	
7150	5322 130 60159	BC847B	
7200	4822 130 42804	BC817-25	
7204	4822 130 63166	BD242B	
7206	4822 130 40995	BD438	
7207	3198 010 42310	BC847BW	
7208	4822 130 40995	BD438	
7209	3198 010 42310	BC847BW	
7210	9322 188 75682	LM2576T-3,3	
7211	3198 010 42310	BC847BW	
7230	4822 209 31378	NJM4556MB	
7231	4822 130 60373	BC857B	
7232	5322 130 60159	BC847B	
7233	5322 130 60159	BC847B	
7250	4822 130 42804	BC817-25	
7252	4822 130 60373	BC857B	
7253	5322 130 60159	BC847B	
7301	5322 130 60159	BC847B	
7302	4822 130 60373	BC857B	
7304	9322 150 74668	TDA7468D	
7330	9322 150 74668	TDA7468D	
7352	9337 148 20653	74HC4051D	
7402	4822 209 17345	M62320FP	
7405	5322 130 60159	BC847B	
7406	5322 130 60159	BC847B	
7407	5322 130 60159	BC847B	Scart
7410	5322 130 60159	BC847B	Scart
7411	5322 130 60159	BC847B	Scart
7421	5322 130 60159	BC847B	
7422	5322 209 11102	HEF4052BT	
7423	5322 130 60159	BC847B	
7451	4822 130 42804	BC817-25	
7452	4822 130 42804	BC817-25	
7454	4822 130 42804	BC817-25	Scart
7455	5322 130 60159	BC847B	Scart
7456	5322 130 60159	BC847B	Scart

Note: Only the parts mentioned in this list are normal service spare parts.



5DTC MODULE

(DVD Version)

TABLE OF CONTENTS

Emergency opening 10-2
Location of switches 10-3
Blockdiagram 10-3

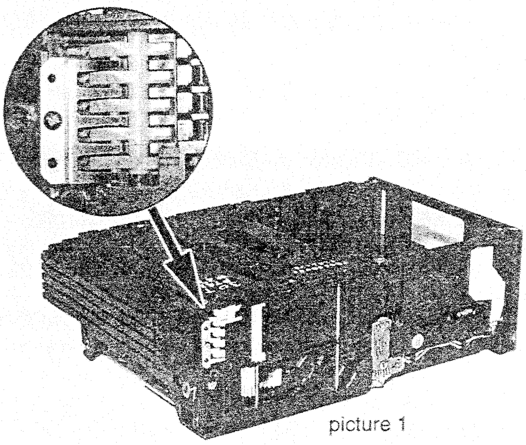
Control Board
Circuit diagram 10-4
Component Layout 10-4

Exploded view loader 10-5
Mechanical assembly drawing + mechanical parts list 10-6
Electrical parts list 10-7

For Mono-FE (Front End) and Mono-BE (Back End) PCB assemblies information see chapters 11 and 12 in this service documentation.

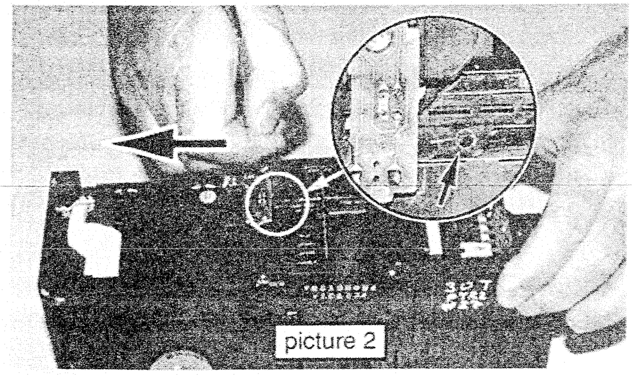
Emergency opening of the trays

The trays of the 5DTC are mechanically locked.



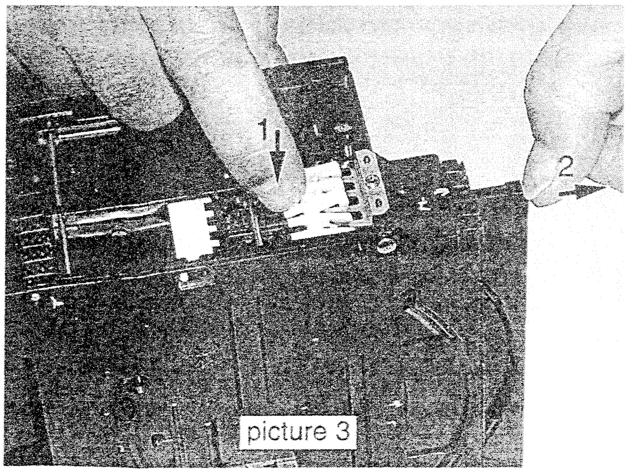
picture 1

To open tray 1, 2 and 3 move lever (pos 29) backwards (e.g. with a screwdriver - see picture 2) to its endposition.



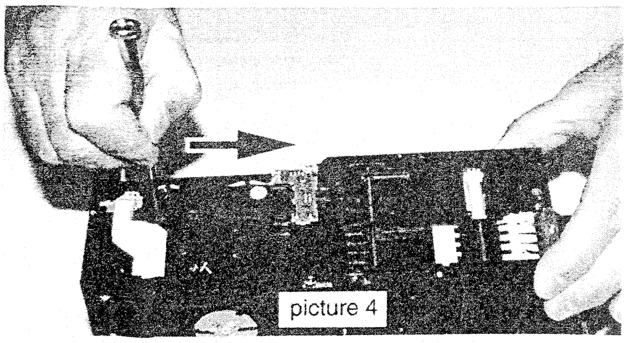
picture 2

Release the locking mechanism and pull out the tray (see picture 3).



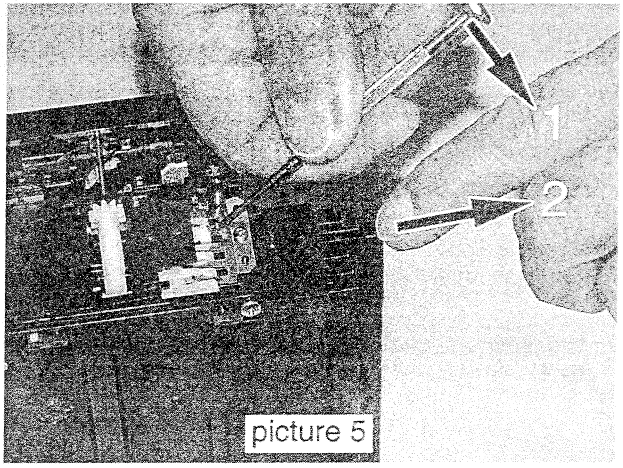
picture 3

To open tray 4 and 5 move lever (pos 29) forward to its endposition (see picture 4).



picture 4

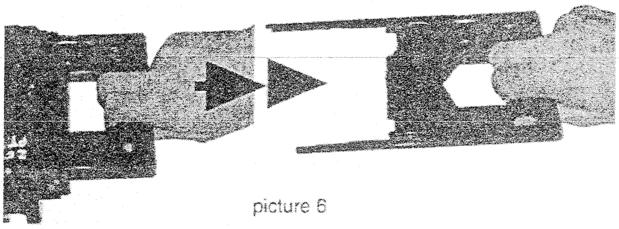
Release snap as shown in picture 5 and pull tray out.



picture 5

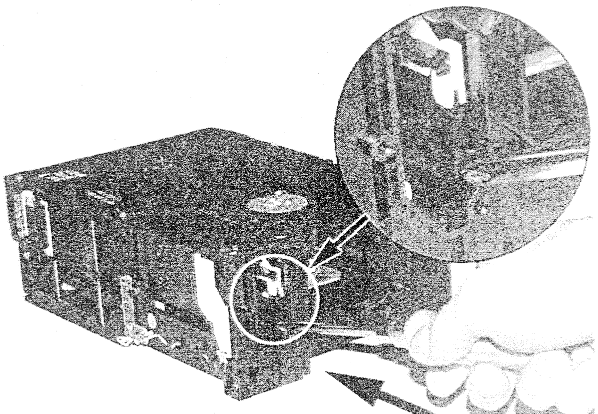
To remove a CD from Play Position perform following steps:

1. Open tray 1 as described before.
2. Tear the tray out with speed (see picture 6). The tray can be inserted aftewards without any alignment.



picture 6

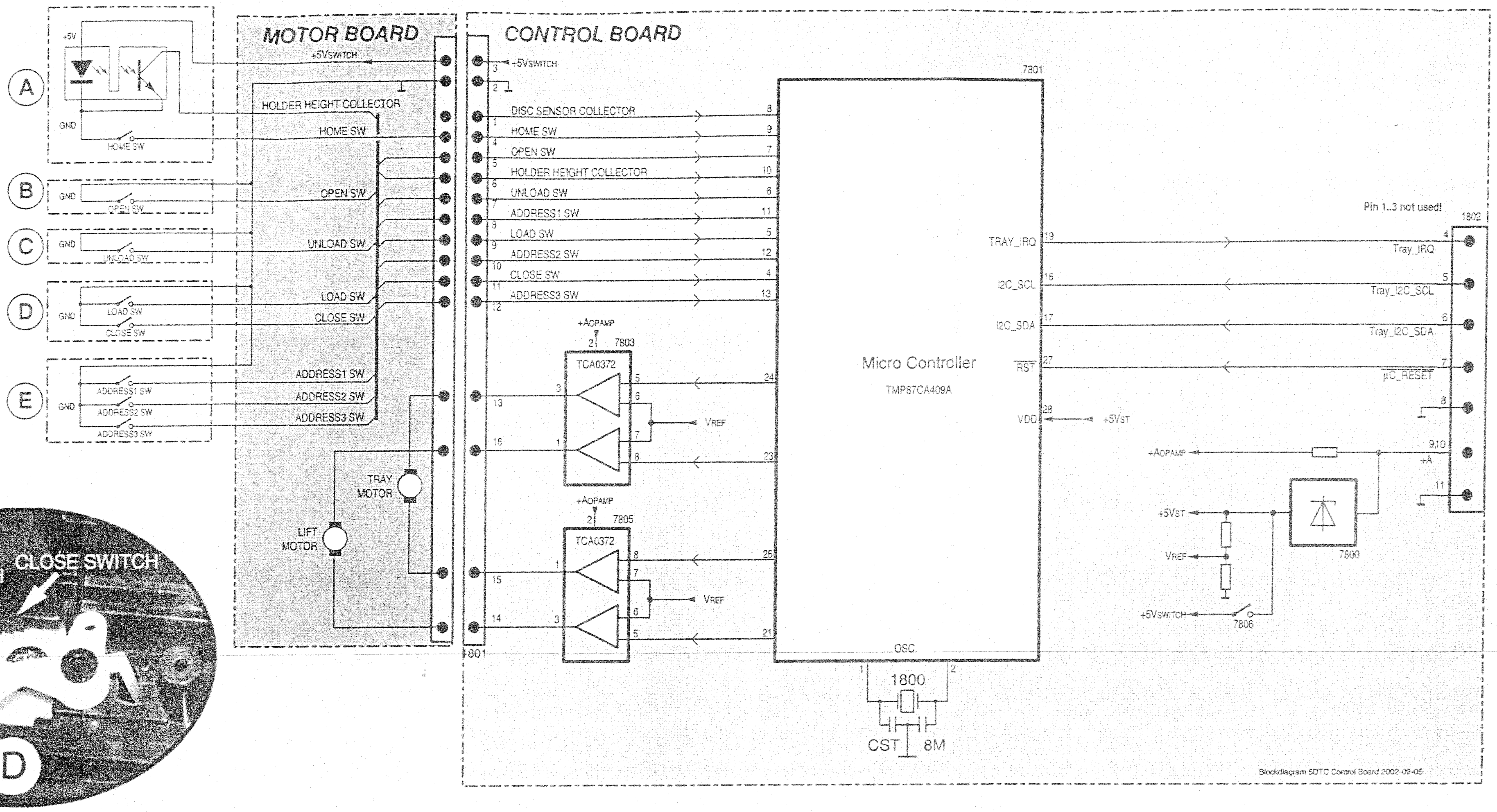
3. Move lever (pos 29) forward to its endposition (see picture 4).
4. Push lever (pos 31) forward (see picture 7).



picture 7

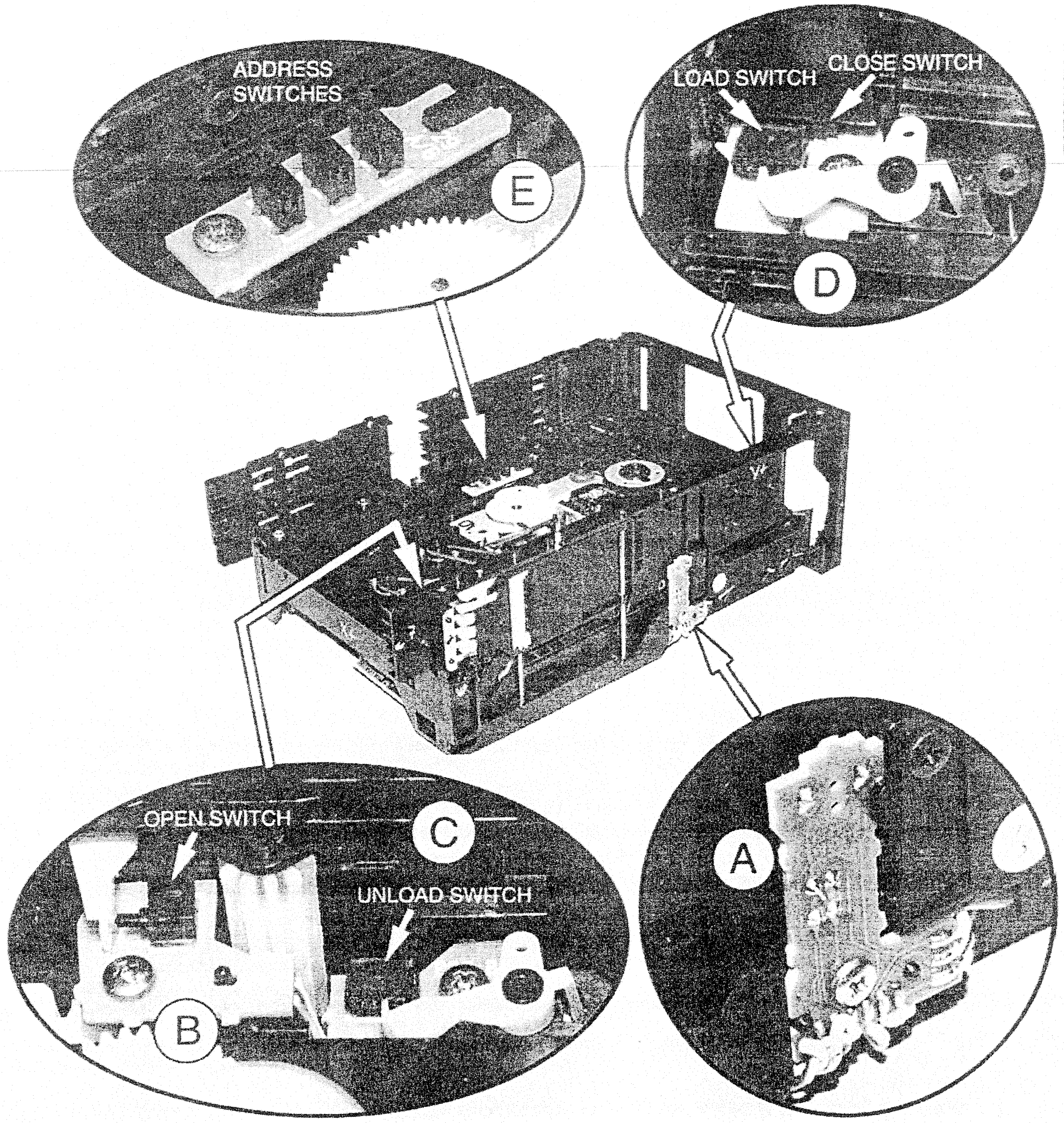
5. Remove CD.

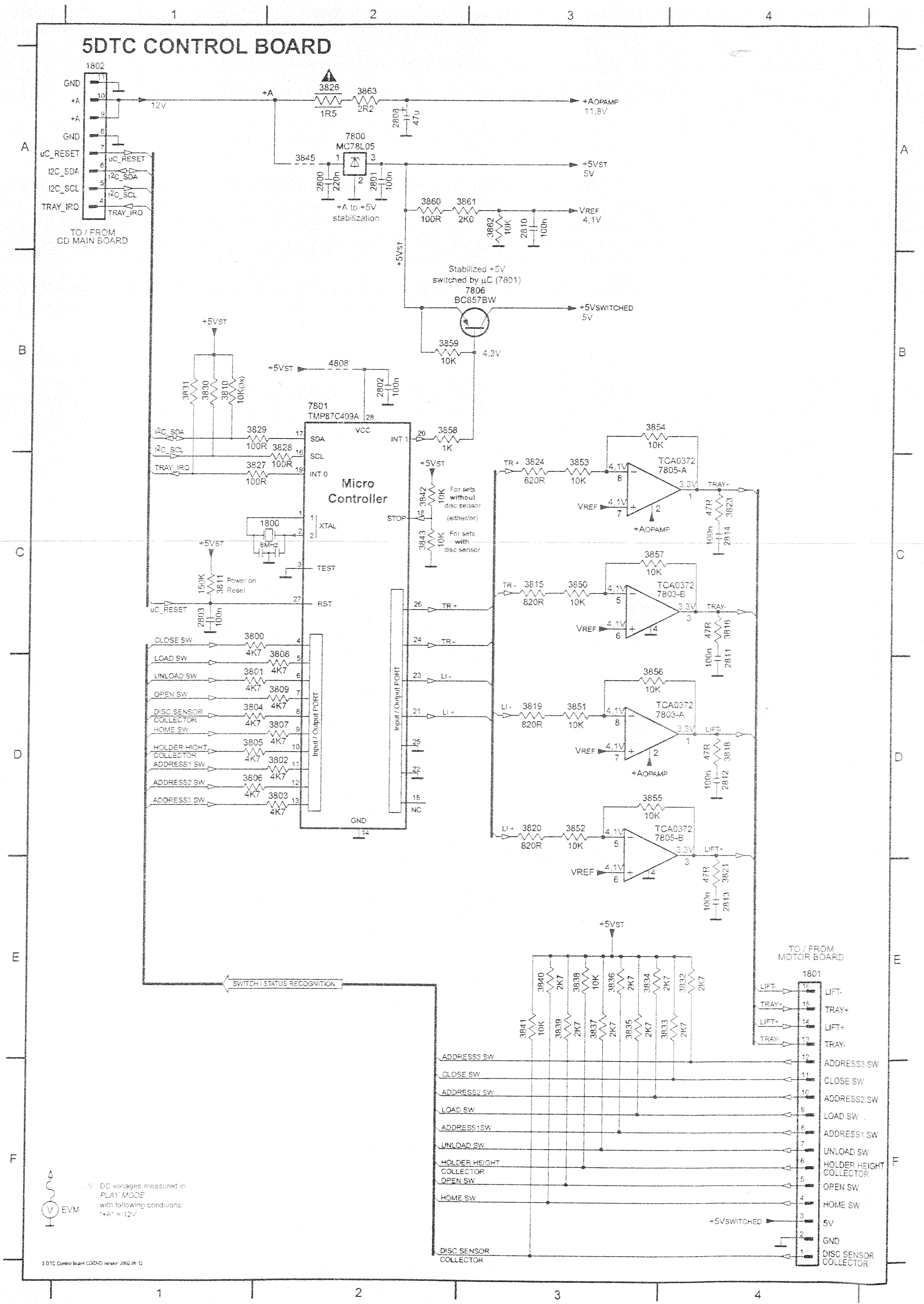
Blockdiagram


A
B
C
D
E
+5V
GND
HOME SW
OPEN SW
UNLOAD SW
LOAD SW
CLOSE SW
ADDRESS1 SW
ADDRESS2 SW
ADDRESS3 SW
MOTOR BOARD
+5VSWITCH
HOLDER HEIGHT COLLECTOR
TRAY MOTOR
LIFT MOTOR
1801
CONTROL BOARD
DISC SENSOR COLLECTOR
+AOPAMP
7803
TCA0372
7805
VREF
7801
Micro Controller
TMP87CA409A
TRAY_IRQ
I2C_SCL
I2C_SDA
RST
VDD
+5VST
OSC.
1800
CST
8M
Pin 1..3 not used!
1802
Tray_IRQ
Tray_I2C_SCL
Tray_I2C_SDA
µC_RESET
+A
7800
7806

Blockdiagram 5DTC Control Board 2002-09-05

Location of switches


ADDRESS SWITCHES
E
LOAD SWITCH
CLOSE SWITCH
D
OPEN SWITCH
C
UNLOAD SWITCH
B
A

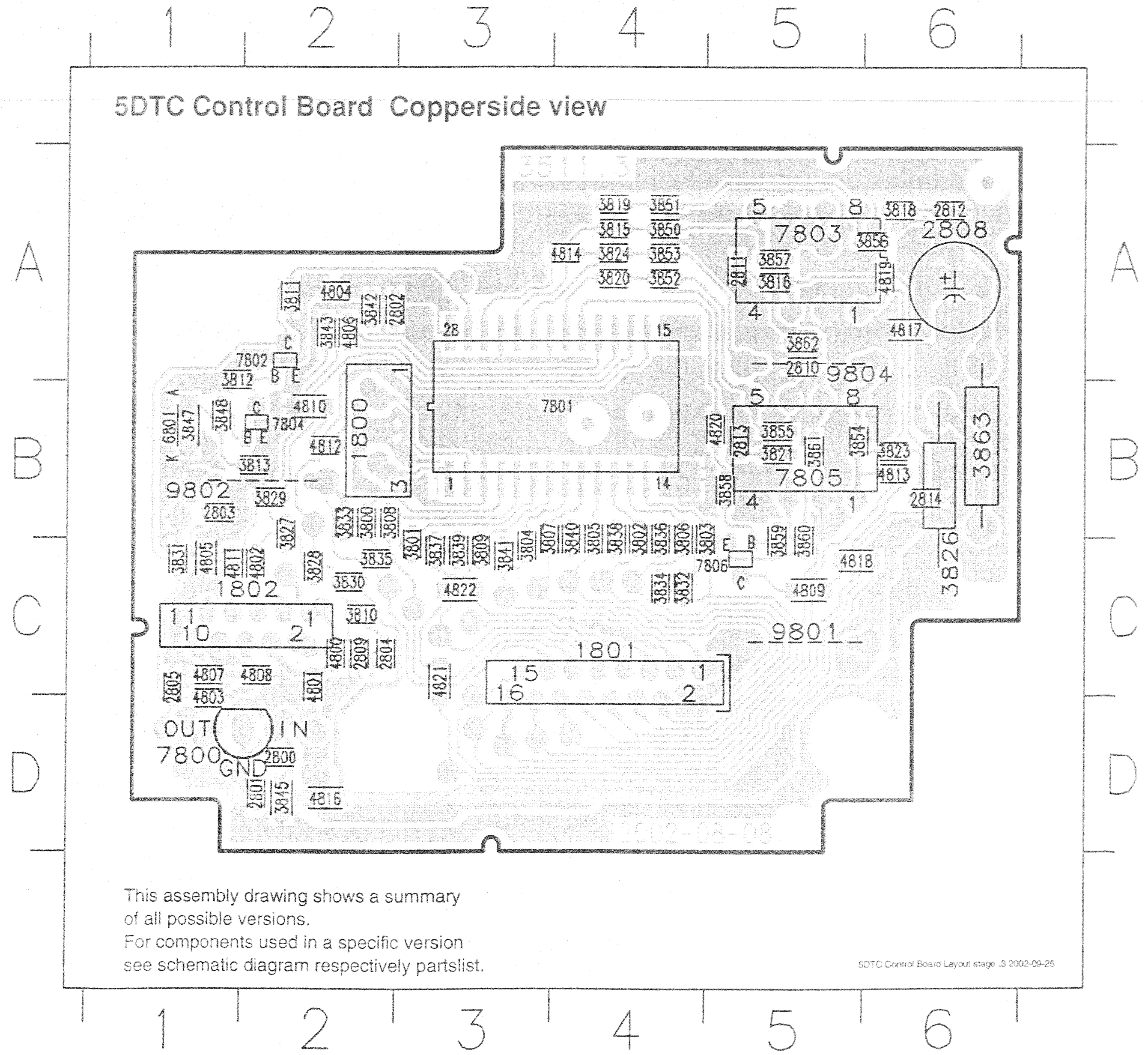

5DTC CONTROL BOARD
1802
GND
+A
+A
GND
uC_RESET
I2C_SDA
I2C_SCL
TRAY_IRQ
TO / FROM
CD MAIN BOARD
3826
1R5
3863
2R2
+AOPAMP
11,8V
7800
MC78L05
3845
+5VST
5V
+A to +5V
stabilization
3860
100R
3861
2K0
VREF
4,1V
Stabilized +5V
switched by µC (7801)
7806
BC857BW
+5VSWITCHED
5V
3859
10K
4,3V
4808
7801
TMP87C409A
Micro
Controller
SDA
SCL
INT 0
XTAL
TEST
RST
1800
8MHz
Power on
Reset
CLOSE SW
LOAD SW
UNLOAD SW
OPEN SW
DISC SENSOR
COLLECTOR
HOME SW
HOLDER HEIGHT
COLLECTOR
ADDRESS1 SW
ADDRESS2 SW
ADDRESS3 SW
Input / Output PORT
For sets
without
disc sensor
For sets
with
disc sensor
TCA0372
7805-A
TCA0372
7803-B
TCA0372
7803-A
TCA0372
7805-B
TR+
TR-
LI-
LI+
TRAY+
TRAY-
LIFT-
LIFT+
SWITCH / STATUS RECOGNITION
TO / FROM
MOTOR BOARD
1801
DC voltages measured in
PLAY MODE
with following conditions:
"+A" = 12V
EVM

Mapping for Circuit Diagram

1800	C2	2810	A3	3804	D1	3811	C1	3824	C3	3833	E4	3841	E3	3854	B3	3862	A3	7805-B	D3
1801	E4	2811	D4	3805	D1	3815	C3	3826	A2	3834	E3	3842	C2	3855	D3	3863	A2	7806	B3
1802	A1	2812	D4	3806	D1	3816	C4	3827	C1	3835	E3	3843	C2	3856	D3	4808	B2		
2800	A2	2813	E4	3807	D2	3818	D4	3828	C2	3836	E3	3845	A2	3857	C3	7800	A2		
2801	A2	2814	C4	3808	D1	3819	D3	3829	B1	3837	E3	3850	C3	3858	B2	7801	B2		
2802	B2	3800	C1	3808	D2	3820	D3	3830	B1	3838	E3	3851	D3	3859	B3	7803-A	D3		
2803	C1	3802	D2	3809	D2	3821	E4	3831	B1	3839	E3	3852	D3	3860	A2	7803-B	C3		
2808	A2	3803	D2	3810	B1	3823	C4	3832	E4	3840	E3	3853	C3	3861	A2	7805-A	C3		

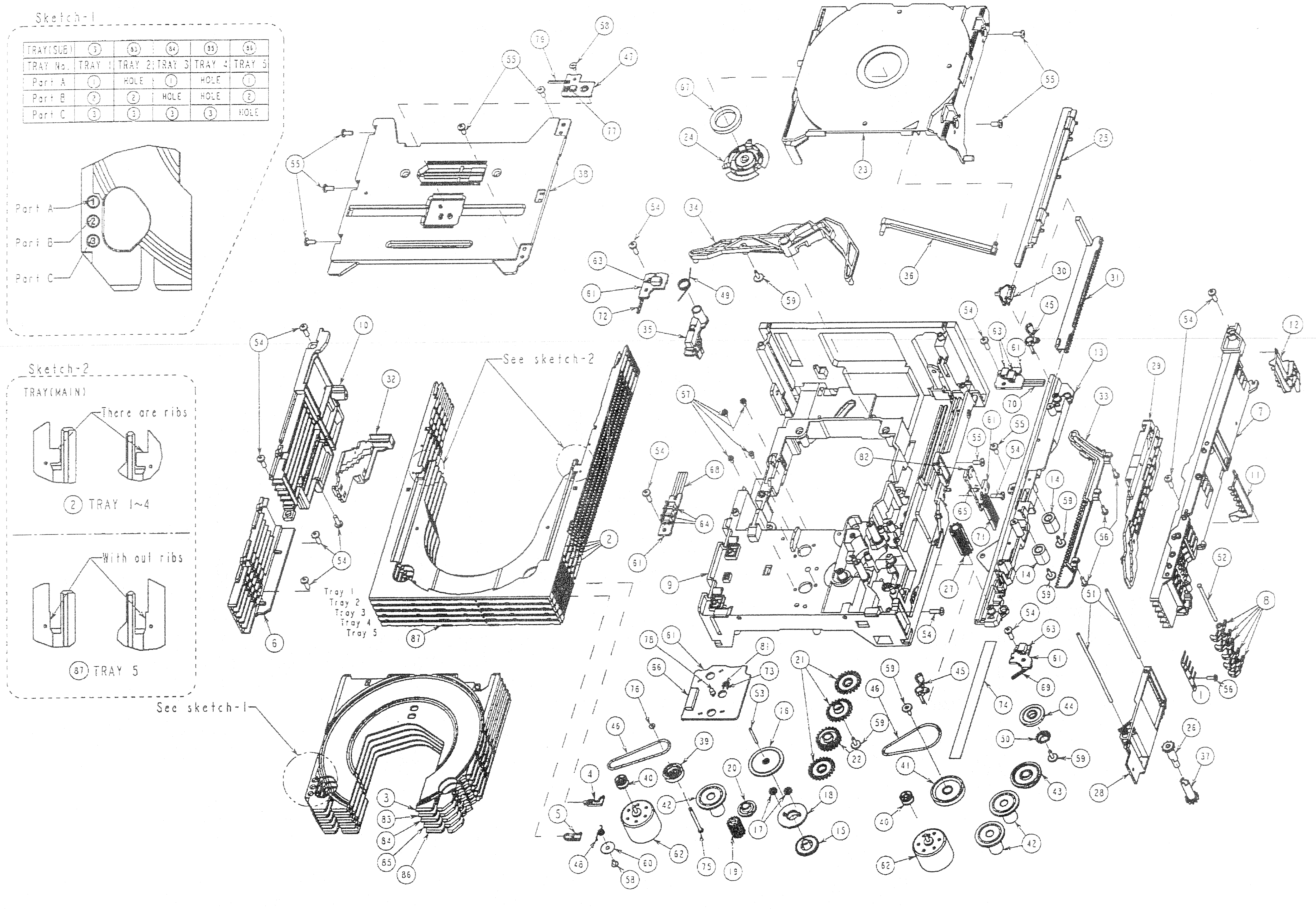
Mapping for Component Layout

1800	B2	2810	A5	3806	C4	3819	A4	3832	C4	3843	A2	3857	A5	4804	A2	4816	D2	7803	A5
1801	C4	2811	A5	3807	C3	3820	A4	3833	B2	3845	D2	3858	B5	4805	C1	4817	A6	7804	B2
1802	C2	2812	A6	3808	B2	3821	B5	3834	C4	3847	B1	3859	C5	4806	A2	4818	C5	7806	C5
2800	D2	2813	B5	3809	C3	3823	B6	3835	C2	3848	B1	3860	C5	4807	C1	4819	A6	9801	C5
2801	D2	2814	B6	3810	C2	3824	A4	3836	C4	3850	A4	3861	B5	4808	C2	4820	B5	9802	B2
2802	A2	3800	B2	3811	A2	3826	B6	3837	C3	3851	A4	3862	A5	4809	C5	4821	C3	9804	A5
2803	B1	3801	C3	3812	A1	3827	B2	3838	C4	3852	A4	3863	B6	4810	B2	4822	C3		
2804	C2	3802	C4	3813	B2	3828	C2	3839	C3	3853	A4	4800	C2	4811	C1	6801	B1		
2805	C1	3803	C4	3815	A4	3829	B2	3840	C4	3854	B5	4801	C2	4812	B2	7800	D2		
2808	A6	3804	C3	3816	A5	3830	C2	3841	C3	3855	B5	4802	C2	4813	B6	7801	B4		
2809	C2	3805	C4	3818	A6	3831	C1	3842	A2	3856	A6	4803	D1	4814	A4	7802	A2		


5DTC Control Board Copperside view
7803
7801
7805
1800
1801
1802
7800
OUT
IN
GND
9801
9802
9804
2808
3863
3826
5DTC Control Board Layout stage 3 2002-09-25

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

Exploded view 5DTC mechanic - for orientation only

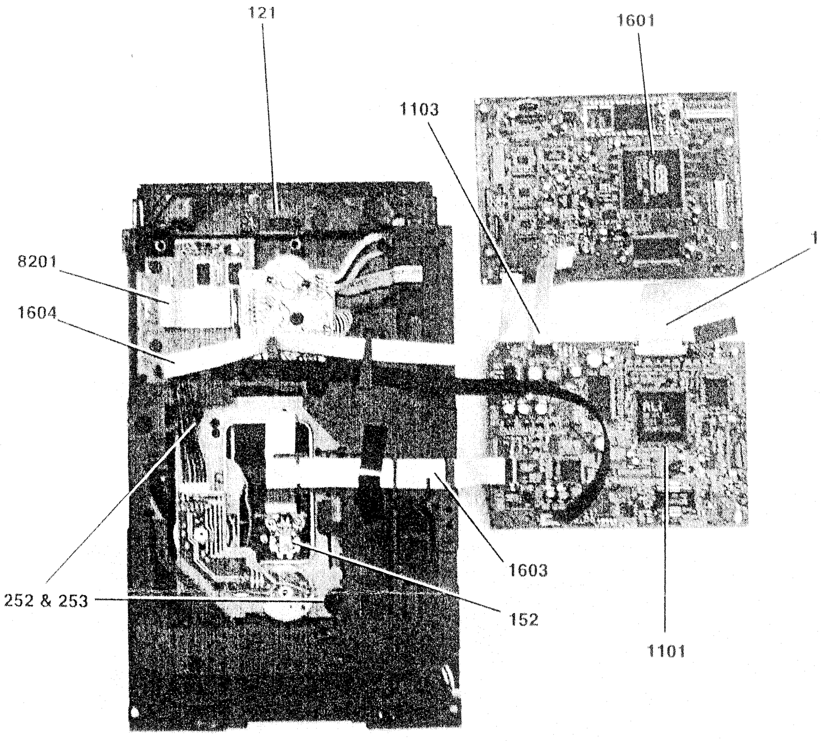


Sketch-1

TRAY(SUB)	⑤	(83)	(84)	(85)	(86)
TRAY No.	TRAY 1	TRAY 2	TRAY 3	TRAY 4	TRAY 5
Part A	①	HOLE	①	HOLE	①
Part B	②	②	HOLE	HOLE	②
Part C	③	③	③	③	HOLE

Part A
Part B
Part C
Sketch-2
TRAY(MAIN)
There are ribs
② TRAY 1~4
With out ribs
(87) TRAY 5
See sketch-1
See sketch-2
Tray 1
Tray 2
Tray 3
Tray 4
Tray 5
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
81
82
83
84
85
86
87

DVD MODULE COMPONENTS



DVD MODULE PARTS LIST

121	3103 308 54710	5DTC Mechanism w/o Electronics
152	3139 119 00311	DVD Mechanism Sanyo-DV33SS
252	3139 113 27501	Damper-Rubber (50 Degrees)
253	3139 113 27501	Damper-Rubber (50 Degrees)
1101	3139 118 56941	Mono FE Board Assy CD222 FE
1102	3139 111 02151	FFC Cable 40P 10cm BD
1103	3139 111 02141	FFC Cable 7P 10cm BD
1601	3139 118 56481	Mono BE Board Assy CD222 P
1601	3139 118 56471	Mono BE Board Assy CD222 PM
1601	3139 118 56461	Mono BE Board Assy CD222 PMK
1603	3139 111 01671	FFC Cable 24P 21cm AD
1604	3139 110 35620	FFC Cable 8P 25cm BD
8021	3103 308 93110	FFC Cable 16P 6cm AD

Note: Only the parts mentioned in this list are normal service spare parts.

Notes:

For Mono FE and Mono BE pc board assembly electrical parts please refer to Chapter 11 and 12.

ELECTRICAL PARTS LIST - CONTROL BOARD

MISCELLANEOUS

1800	4822 242 72066	Ceram Filter 8MHz
1801	2422 025 17065	FFC Connector 16Pin Vert.
1802	2422 025 17788	FFC Connector 8Pin Vert.

CAPACITORS

2800	4822 126 13879	220nF +80/-20% 16V
2801	2238 586 59812	100nF 10% 50V
2802	2238 586 59812	100nF 10% 50V
2803	2238 586 59812	100nF 10% 50V
2808	4822 124 40433	47uF 20% 25V
2810	3198 017 34730	47nF 10% 16V
2811	2238 586 59812	100nF 10% 50V
2812	2238 586 59812	100nF 10% 50V
2813	2238 586 59812	100nF 10% 50V
2814	2238 586 59812	100nF 10% 50V

RESISTORS

3800	4822 051 30472	4k7 5% 0,062W
3801	4822 051 30472	4k7 5% 0,062W
3802	4822 051 30472	4k7 5% 0,062W
3803	4822 051 30472	4k7 5% 0,062W
3804	4822 051 30472	4k7 5% 0,062W
3805	4822 051 30472	4k7 5% 0,062W
3806	4822 051 30472	4k7 5% 0,062W
3807	4822 051 30472	4k7 5% 0,062W
3808	4822 051 30472	4k7 5% 0,062W
3809	4822 051 30472	4k7 5% 0,062W
3810	4822 051 30103	10k 5% 0,062W
3811	4822 051 30154	150k 5% 0,062W
3815	5322 117 13057	820R 1% 0,063W
3816	4822 051 30479	47R 5% 0,062W
3818	4822 051 30479	47R 5% 0,062W
3819	5322 117 13057	820R 1% 0,063W
3820	5322 117 13057	820R 1% 0,063W
3821	4822 051 30479	47R 5% 0,062W
3823	4822 051 30479	47R 5% 0,062W
3824	5322 117 13057	820R 1% 0,063W
3826	4822 052 10228	2R2 5% 0,33W
3827	4822 051 30101	100R 5% 0,062W
3828	4822 051 30101	100R 5% 0,062W
3829	4822 051 30101	100R 5% 0,062W
3830	4822 051 30103	10k 5% 0,062W
3831	4822 051 30103	10k 5% 0,062W
3832	4822 051 30272	2k7 5% 0,062W
3833	4822 051 30272	2k7 5% 0,062W
3834	4822 051 30272	2k7 5% 0,062W
3835	4822 051 30272	2k7 5% 0,062W
3836	4822 051 30272	2k7 5% 0,062W
3837	4822 051 30272	2k7 5% 0,062W
3838	4822 051 30103	10k 5% 0,062W
3839	4822 051 30272	2k7 5% 0,062W
3840	4822 051 30272	2k7 5% 0,062W
3841	4822 051 30103	10k 5% 0,062W
3842	4822 051 30103	10k 5% 0,062W
3845	4822 051 20159	15R 5% 0,1W
3850	4822 117 12706	10k 1% 0,063W
3851	4822 117 12706	10k 1% 0,063W
3852	4822 117 12706	10k 1% 0,063W
3853	4822 117 12706	10k 1% 0,063W
3854	4822 117 12706	10k 1% 0,063W
3855	4822 117 12706	10k 1% 0,063W
3856	4822 117 12706	10k 1% 0,063W
3857	4822 117 12706	10k 1% 0,063W
3858	4822 051 30102	1k 5% 0,062W
3859	4822 051 30103	10k 5% 0,062W
3860	5322 117 13017	100R 1% 0,063W
3861	2322 704 62002	2k 1% 0,063W
3862	4822 117 12706	10k 1% 0,063W
3863	4822 053 10228	2R2 5% 1W
4800	4822 051 30008	0R Jumper 0603
4802	4822 051 30008	0R Jumper 0603
4803	4822 051 30008	0R Jumper 0603
4804	4822 051 30008	0R Jumper 0603
4805	4822 051 20008	0R Jumper 0805
4806	4822 051 30008	0R Jumper 0603
4807	4822 051 30008	0R Jumper 0603
4808	4822 051 30008	0R Jumper 0603
4809	4822 051 20008	0R Jumper 0805
4810	4822 051 20008	0R Jumper 0805
4811	4822 051 30008	0R Jumper 0603
4812	4822 051 30008	0R Jumper 0603
4813	4822 051 30008	0R Jumper 0603
4814	4822 051 30008	0R Jumper 0603
4816	4822 051 20008	0R Jumper 0805
4817	4822 051 20008	0R Jumper 0805
4818	4822 051 20008	0R Jumper 0805
4819	4822 051 30008	0R Jumper 0603
4820	4822 051 30008	0R Jumper 0603
4821	4822 051 20008	0R Jumper 0805
4822	4822 051 20008	0R Jumper 0805

TRANSISTORS & INTEGRATED CIRCUITS

7800	4822 209 72042	MC78L05ACP, Stabilizer
7801	9322 150 41668	TMP87P809M Microcontroller
7803	4822 209 62059	TCA0372DP1, 2-Fold Op-Amp.
7805	4822 209 62059	TCA0372DP1, 2-Fold Op-Amp.
7806	3198 010 42320	BC857BW

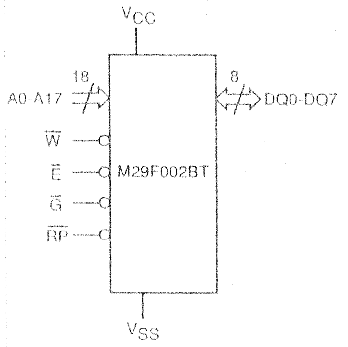
Note: Only the parts mentioned in this list are normal service spare parts.

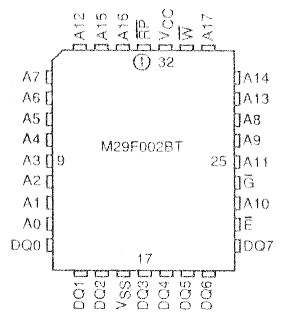
MONO-FE BOARD

TABLE OF CONTENTS

M29F002BT 11-1
M5705 (Ali) Chip 11-2
SP3721A Internal Block Diagrm 11-5
Top View - SMD & Component layout 11-6
Bottom View - Component layout 11-7
Servo Ampliers & Motor Drives Circuit Diagram 11-8
CD/DVD ROM Controller Circuit Diagarm 11-9
Electrical parts list 11-10

M29F002BT





Function Description

A0-A17	Address Inputs
DQ0-DQ7	Data Inputs/Outputs
$\overline{E}$	Chip Enable
$\overline{G}$	Output Enable
$\overline{W}$	Write Enable
$\overline{RP}$	M29F002BT, M29F002BB: Reset/Block Temporary Unprotect M29F002BNT, M29F002BNB: Not Connected Internally
V_{CC}	Supply Voltage
V_{SS}	Ground

M5705 Pins Descriptions

Pin Name	Pin No.	Type	Description
Servo Data Slicer Interface Pins			
XSRFIN	2	I / A	Analog RF signal input after passing through the equalizer.
XSIPIN	3	I / A	Inverting input pin of data slicer.
XSDSSLV	5	O / A	Slice level output pin.
XSRSLINT	6	I / A	Reference current setting pin for analog data slicer.
Servo DAC Interface Pins			
XSAWRC	8	O / A	Output for enlarge VCO range. Analog output from DAC buffer.
XSRFGC	9	O / A	RF gain control output.
XSEFGC	10	O / A	E,F gain control output.
XSFOCUS	11	O / A	Output voltage level for focusing buffer IC.
XSTRACK	12	O / A	Output voltage level for tracking buffer IC.
XSSLEG	13	O / A	Output voltage level for sledge buffer IC.
XSMOTOR	15	O / A	Output voltage level for spindle motor buffer IC.
Servo Comparator Interface Pins			
XSRFRPLP	17	I / A	High bandwidth low pass filter input for RFRP.
XSTELP	18	I / A	High bandwidth low pass filter input for TE.
Servo ADC Interface Pins			
XSVREF2	19	I / A	2.1V reference voltage input.
XSRFRP	20	I / A	RF ripple/envelope signal input.
XSTEXI	21	I / A	Tracking zero crossing input signal.
XSTEI	23	I / A	Tracking error input signal.
XSFEI	24	I / A	Focus error input signal.
XSCEI	25	I / A	1. Center error input signal. 2. Photo Interrupt Input.
XSSBAD	27	I / A	Sub-beam addition signal input.
Servo PLL Interface Pins			
XSPDIREF	166	I / A	Phase detector reference current generator. Connect a resistor between this pin and ground to set reference current.
XSFDIREF	167	I / A	Frequency detector reference current generator. Connect a resistor between this pin and ground to set reference current.
XSPLLFTR2	169	I / A	Data PLL loop filter pin #2.
XSFDO	171	O / A	Output node of frequency detector charge pump circuit.
XSFTROPI	172	I / A	Input node of loop filter OP circuit.
XSVR_PLL	173	I / A	PLL reference voltage input.
XSPDOFTR2	174	I / A	Phase detector filter pin #1.
XSVREFO	175	O / A	Reference voltage output.
XSAWRCVCO	176	I / A	Auto Wide Range ControlVCOinput pin. For enlarge VCO range in CAV mode.
Servo Control Interface Pins			
XSDFCT	29	I	Defect detection signal input.
XSCSJ	30	O	Chip select signal for accessing control registers.
XSCLK	31	O	Clock output for accessing control registers.
XSDATA	32	I/O	Registers data input/output pin.
XSLDC	33	O	Laser diode on/off control output for both CD/DVD.
XSFGIN	34	I	Motor Hall sensor input.
XSSPDON	35	O	Spindle motor on output.
XSFLAG[3:0]	36,37, 38,39	O	These pins are used to monitor some status of servo control block.

Pin Name	Pin No.	Type	Description
Microcontroller Interface Pins			
XGPIO[2:0]	48,51,52	I/O	1. These pins are used as general purpose I/O bus. 2. When use internal microcontroller, XGPIO[2] can be used as programmable I/O port 3.6.
XMP1_7	40	I/O	Internal microcontroller programmable I/O port 1.7.
XMP1_6	41	I/O	Internal microcontroller programmable I/O port 1.6.
XMP1_5	43	I/O	***This pin is now changed to be NC.***
XMP1_4	44	I/O	Internal microcontroller programmable I/O port 1.4.
XMP1_3	45	I/O	Internal microcontroller programmable I/O port 1.3.
XMP1_2	47	I/O	Internal microcontroller programmable I/O port 1.2.
XMP1_1	49	I/O	Internal microcontroller programmable I/O port 1.1.
XMP1_0	57	I/O	Internal microcontroller programmable I/O port 1.0. This pin is default used as the A16 (microcontroller address line 16).
XMFSCSJ	46	I/O	Output chip select connected to external flash ROM chip enable pin.
XMPSENJ	54	I/O	Output program store enable connected to external ROM PSENJ pin.
XMALE	56	I/O	This signal is used as address latch signal in address/data mux mode.
XMCSJ	70	I/O	1. This signal must be asserted for all microcontroller accesses to the registers of this chip. 2. When use internal microcontroller, this signal can be used as programmable I/O port 3.1.
XMRDJ	71	I/O	1. This signal is used as the Read Strobe signal. 2. When use internal microcontroller, this signal can be used as programmable I/O port 3.0.
XMWRJ	72	I/O	This signal is used as the Write Strobe signal.
XMINT1J	73	I/O	1. This signal is an interrupt line to the microcontroller. 2. When use internal microcontroller, this signal can be used as programmable I/O port 3.7.
XMA[15:0]	91, 90, 89, 87, 74, 75, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86	I/O	These pins are used as address bus.
XMD[7:0]	69, 68, 67, 66, 65, 64, 63, 62	I/O	These pins are used as data bus for the 16-bit processor mode, or the address/data mux bus for the 8-bit processor mode.
Miscellaneous Pins			
XTPLCK	163	I/O	**PLCK test pin.**
XTSLRF	164	I/O	**SLRF test pin.**
XOSC1	59	I	**Crystal input/ System clock.** The input frequency from outside crystal or oscillator is 33.8688Mhz.
XOSC2	60	O	**Crystal output.**
XCRSTJ	53	I	**Chip Reset.** An asserted lowinput generates a component reset that stops all operations within the chip and deasserts all output signals. All input/output signals are set to input.

M5705 (Ali) Features

Data Separator

- Built-in data slicer and data PLL for data recovery from RF signal.
- Supports digital/analog slice level adjustment.
- Built-in auto calibration function.
- Built-in auto wire range control function.

DVD-DSP

- Built-in synchronous pattern/ID detection /protection/separation.
- Built-in EFM+ (8 to 16) demodulation circuit.
- Built-in high performance RSPC ECC circuit.
- Supports up to 6X DVD-ROM system with ECC correcting "on the fly".
- Built-in descrambler/EDC circuit.

CD-DSP

- Synchronous pattern detection, protection and interpolation.
- Built-in EFM demodulation circuit, subcode demodulation circuit.
- Dual C1 correction and quadrule C2 correction.
- Subcode Q data can output with audio data synchronously.

Digital Servo

- Built-in A/D and D/A converters for servo control signals processing.
- Built-in digital controller for focus, tracking servo control of CD/DVD systems.
- Built-in CLV/CAV auxiliary function for spindle servo control.
- Built-in "Seek Sensor" auxiliary circuit for seek control.
- Automatic adjustment of focus servo and tracking servo, for loop gain, offset and balance.
- Built-in RF gain automatic adjustment function.
- Built-in AFC circuit and APC circuit for CLV and AFC circuit for CAV spindle servo of CD/DVD systems.
- Built-in defect and shock protection function.

DRAM Interface

- Supports up to 16 Mb EDO DRAM and SDRAM.
- Separate buffer address pointers and automatic address calculation that save firmware effort.
- *Read-ahead cache scheme for multimedia* isochronous transfer.
- Protection logic preventing uncorrected sectors being released to the host.

Target Search

- Built-in target sector searching circuit for auto-searching the target sector.
- Automatic data buffering after the target sector has been located.

C3 ECC/EDC

- Programmable Reed-Solomon Product Code (RSPC) that allows different error correction schemes for CD-ROM.
- Built-in On-chip EDC function.
- Support up to 32X CD-ROM system with ECC correcting "on the fly".

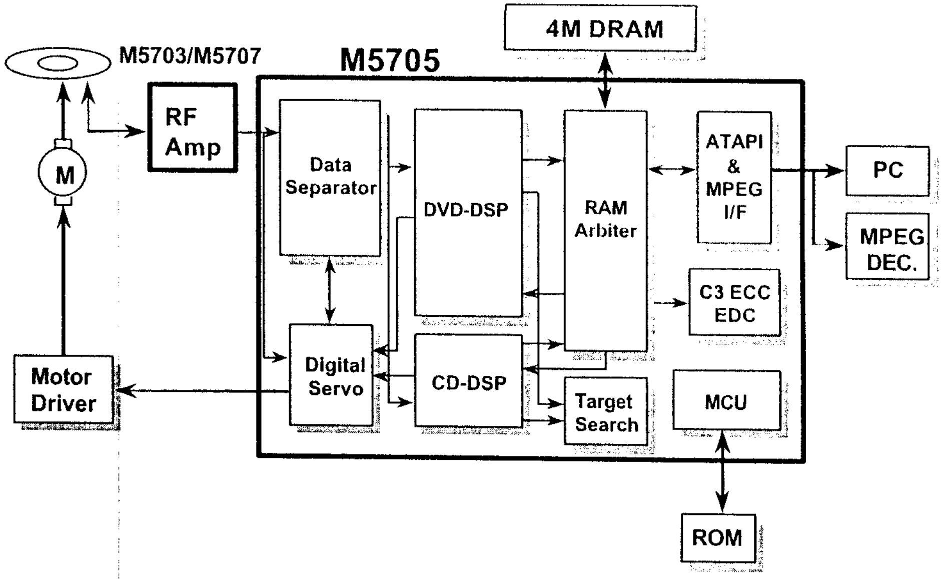
Host Interface

- Supports ATA PIO mode 4 timing
- Supports Multiword DMA mode 2 timing
- Compliant with SFF-8020(ATAPI) 2.5, ATA 3(Overlapping feature), and SFF-8090 (ATAPI for DVD) standard
- High current drivers with slew rate control for direct connecting to the ATA bus and noise immunity.
- Automatic Read Control Circuit for host data transfer.
- Automatic wake up from power down on host reset or command write
- Automatic sequence for packet command receiving and Automatic updating of the host task file registers
- Supports ATAPI write command that can let user update firmware from PC.
- Built-in authentication circuit for copy protection.
- Multiplexed MPEG decoder interface (local bus).

Microcontroller Interface

- Embedded microcontroller compatible with Intel 8032 command set
- Supports Intel 8032 series MCUs
- Supports Intel 8032 series MCUs and Hitachi H8 series MCUs.
- Supports automatically download firmware function directly from ATAPI interface to flash memory
- Supports "on-system" upgrade flash memory function from CD-R discs or ATAPI interface
- High speed register (buffer RAM) access to meet the requirement of high performance system
- Supports Direct mapped access to the buffer RAM using ready bit handshaking

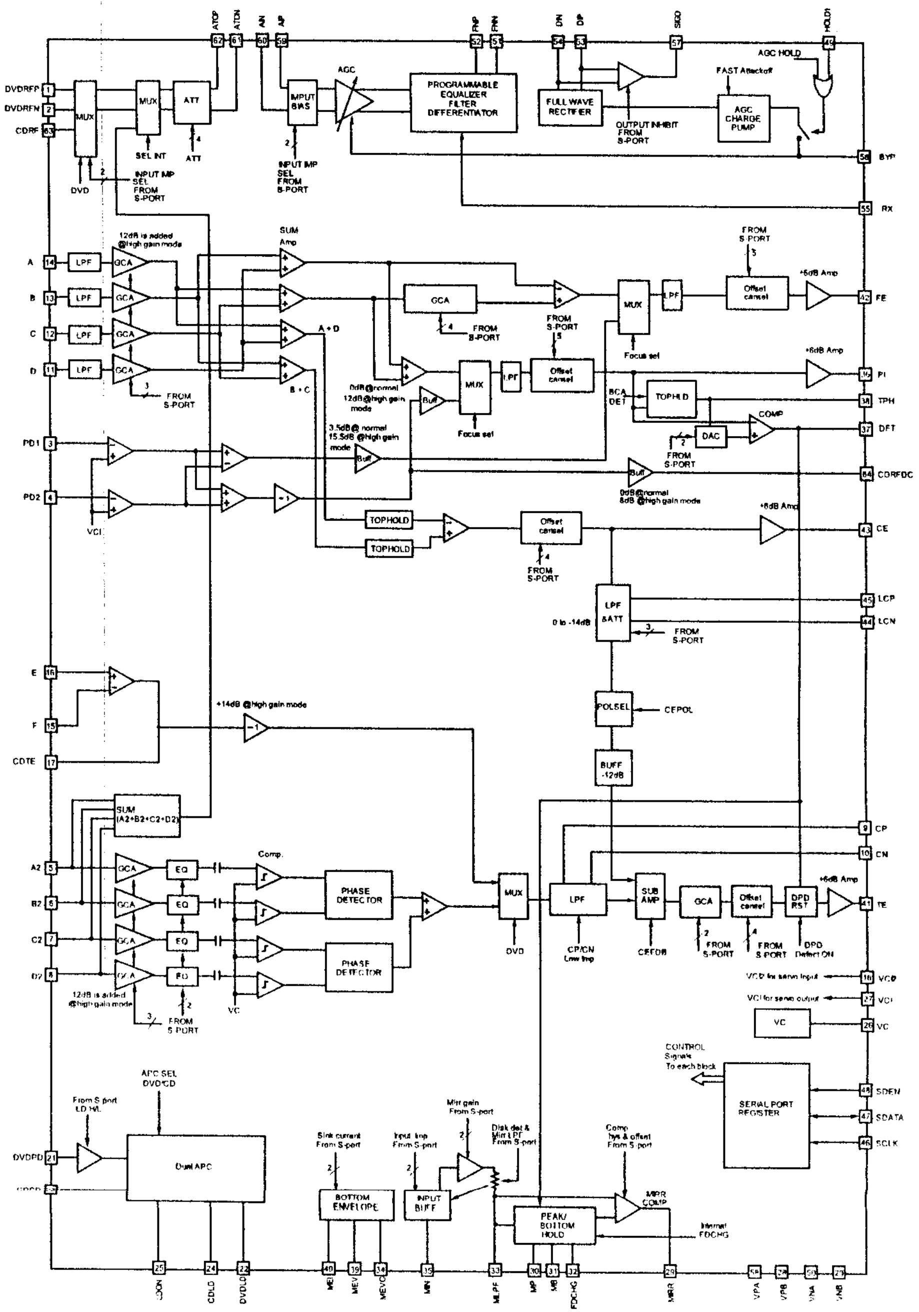
M5705 (Ali) Application



M5705 Pins Descriptions

Pin Name	Pin No.	Description
Power Pins		
AVDD5_DS	4	Analog Power +5V for Data Slicer part.
AVDD5_DA	14	Analog Power +5V for DAC part.
AVDD5_AD	26	Analog Power +5V for ADC part.
AVDD5_PL	168	Analog Power +5V for Data PLL part.
VDD	7,55,58, 76,115, 146,150, 162	Power + 3.3V for digital core logic and pad.
AVSS_DS	1	Analog Ground for Data Slicer part.
AVSS_DA	16	Analog Ground for DAC part.
AVSS_AD	22	Analog Ground for ADC part.
AVSS_PL	170	Analog Ground for Data PLL part.
GND	28,42,61, 88,110, 130,138, 154,165	Digital Ground for core logic and pad.

SP32721A Internal Block Diagram



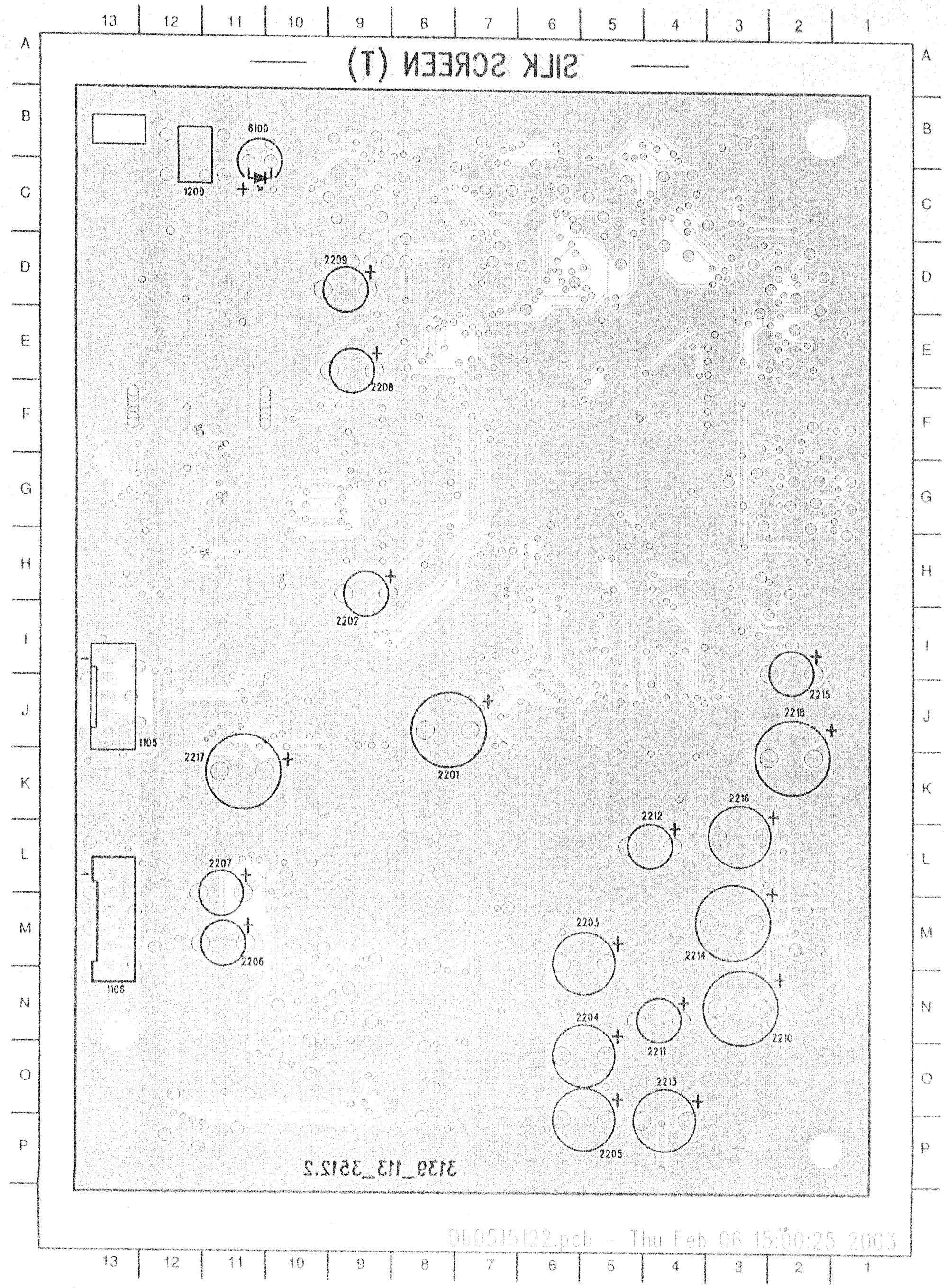
ATCP
ATCN
AN
AP
FNP
FNN
DN
DP
SIGO
HOLD1
DVDRFP
DVDRFN
CDRF
MUX
ATT
SEL INT
INPUT IMP SEL FROM S-PORT
DVD
INPUT BIAS
AGC
PROGRAMMABLE EQUALIZER FILTER DIFFERENTIATOR
FULL WAVE RECTIFIER
OUTPUT INHIBIT FROM S-PORT
AGC HOLD
FAST Attack/off
AGC CHARGE PUMP
BYP
RX
A
B
C
D
LPF
GCA
12dB is added @high gain mode
SUM Amp
A+D
B+C
FROM S-PORT
Focus sel
Offset cansel
+6dB Amp
FE
PI
TPH
DFT
CDRFDC
TOPHOLD
BCA DET
DAC
COMP
Buff
0dB@normal 12dB@high gain mode
3.5dB@ normal 15.5dB @high gain mode
0dB@normal 6dB @high gain mode
PD1
PD2
VCI
CE
LPF &ATT
0 to -14dB
LCP
LCN
E
F
CDTE
+14dB @high gain mode
POLSEL
CEPOL
BUFF -12dB
SUM (A2+B2+C2+D2)
A2
B2
C2
D2
EQ
Comp.
PHASE DETECTOR
CP
CN
SUB AMP
DPD RST
TE
CP/CN Low Imp
CEFDB
DPD Defect ON
VCD for servo input
VCI for servo output
VCD
VC
CONTROL Signals To each block
SERIAL PORT REGISTER
SDEN
SDATA
SCLK
APC SEL DVD/CD
From S port LD H/L
DVDPD
CDPD
Dual APC
Sink current From S-port
BOTTOM ENVELOPE
Input Imp From S-port
INPUT BUFF
Mirr gain From S-port
Disk det & Mirr LPF From S-port
PEAK/ BOTTOM HOLD
Comp hys & offset From S port
MIRR COMP
Internal FDCHG
CDON
CDLD
DVDLD
MEI
MEV
MEVO
MIN
MLPF
MP
MB
FDCHG
MIRR
VPA
VPB
VNA
VNB

M5705 Pins Descriptions

Pin Name	Pin No.	Type	Description
Host Interface Pins			
XHCS1J	94	I	This pin is used to select the command block task file registers.
XHCS3J	93	I	This pin is used to select the control block task file registers.
XHIORJ	103	I	Asserted by the host during a host I/O read operation.
XHIOWJ	104	I	Asserted by the host during a host I/O write operation.
XHDRQ	105	O	**1. DMA request**. This pin is configured as the DMA request signal, and is used during DMA transfer between the host and the controller. This pin is tri-stated when DMA transfers are not enabled. **2. MPEG acknowledge**. This pin is used as the ACKJ signal when MPEG interface mode is selected.
XHDACKJ	101	I	**1. DMA acknowledge**. This pin is configured as DACKJ, and is used as the DMA acknowledge signal during DMA data transfers. **2. MPEG request**. This pin is used as the REQ signal when MPEG interface mode is selected.
XHCS16J	99	O	**1. 16-bit data select**. This signal indicates that a 16-bit data transfer is active on the host data bus. This pin is open-drain tri-state output. **2. MPEG clock**. This pin is used as the CLOCK signal when MPEG interface mode is selected.
XHRSTJ	50	I	**Host Reset.** The reset of ATA bus
XHINT	100	O	**1. Host interrupt request**. This tri-state pin is the host interrupt request, and is asserted to indicate to the host that the controller needs attention. **2. MPEG begin**. This pin is used as the BEGIN signal when MPEG interface mode is selected.
XHPDIAGJ	97	I/O	This pin is used as the Passed Diagnostics signal, and may be an input or an open-drain output.
XHDASPJ	92	I/O	This pin is used as the Drive Active/ Slave Presentsignal, and is an input or an open-drain output. This pin is used for Master/Slave drive communication and/or for driving an LED.
XHIORDY	102	O	**1. I/O channel ready.** This signal is driven low to extend host transfer cycles when the controller is not ready to respond. This pin will be tri-stated when a read or write is not in progress. **2. MPEG error**. This pin is used as the ERROR signal when MPEG interface mode is selected.
XHA[2:0]	95, 98, 96	I	**Host address lines**. The host address lines A[2:0] are used to access the various host control, status, and data registers.
XHD[15:0]	106, 108, 111, 113, 116, 118, 120, 122, 123, 121, 119, 117, 114, 112, 109, 107	I/O	**1. Host data bus**. This bus is used to transfer data and status between the host and the controller. **2. MPEG data bus 7-0**. The HD[7:0] are used as the DATA[7:0] when MPEG interface mode is selected. **3. VCD I/F.** Bit3-0 are used as VCD I/F signal when VCD function is enabled. The relationship of bit3-0 and VCD I/F is as follow. HD0 → CD-DATA HD1 → CD-LRCK HD2 → CD-BCK HD3 → CD-C2PO

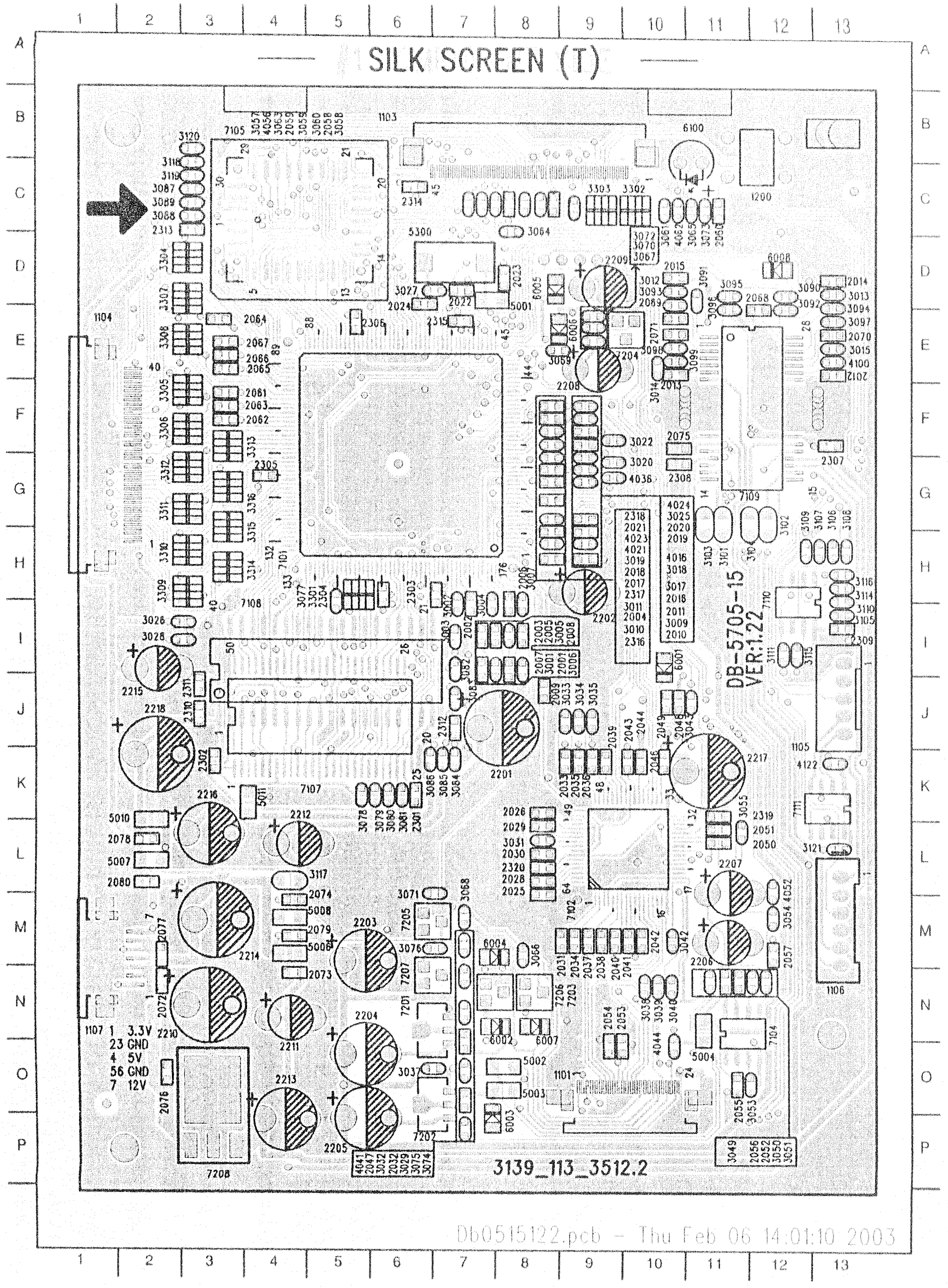
Pin Name	Pin No.	Type	Description
RAM Interface Pins			
XRSDCLK	143	O	This signal is the clock output for SDRAM.
XROEJ	147	O	This signal is used as the memory output enable for external DRAM buffers. After RSTJ is asserted, this signal will be low.
XRWEJ	142	O	This signal is asserted low when a buffer memory write operation is active.
XRRASJ	144	O	This signal is used as Row address output to external DRAM buffer. After RSTJ is asserted, this signal will be high.
XRCASJ	145	O	This signal is used as column address output to external DRAM. After RSTJ is asserted, this signal will be high.
XRA[11:0]	151, 152, 148, 149, 153, 155, 156, 157, 161, 160, 159, 158	O	**1. RAM address lines**. These are bits 11-0 for addressing the buffer memory. **2. Hardware setting**. The bits 6-0 are used as hardware setting for some functions. RA[9] : FLASH size is 64K/128K 1 : FLASH size is 64K. 0 : FLASH size is 128K. RA[8] : External CPU is 8032/H8 1 : 8032 0 : H8 RA[7] : Microcontroller programmable I/O port 1 pin control 1 : By internal microcontroller. 0 : By registers to decide input/output. RA[6] : System testpin output. 1 : Normal operation. 0 : System test pin output. RA[5] : For testing purpose, don't need to set RA[4] : IDE master/slave. 1 : Slave. 0 : Master. RA[3] : For testing purpose, don't need to set RA[2] : For testing purpose, don't need to set RA[1-0] : MCU Mode selection. 11 : Normal Mode (internal uP,internal address latch). 10 : Outside uP Mode (ICE Mode). 01 : Test mode for internal uP testing. 00 : Internal uP mode with external address latch.
XRD[15:0]	124, 126, 128, 131, 133, 135, 137, 140, 141, 139, 136, 134, 132, 129, 127, 125	I/O	These signals are the 8-bit parallel data lines to/from the buffer memory.

BOTTOM VIEW - COMPONENT LAYOUT


SILK SCREEN (T)
13
12
11
10
9
8
7
6
5
4
3
2
1
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
6100
1200
2209
2208
2202
1105
2217
2201
2215
2218
2216
2212
2207
2206
1106
2203
2214
2204
2211
2210
2213
2205
3139_113_3512.2
Db0515122.pcb - Thu Feb 06 15:00:25 2003

1105	I13
1106	M13
1200	B11
2201	J8
2202	H9
2203	M6
2204	O6
2205	O6
2206	M11
2207	L11
2208	E9
2209	D9
2210	N3
2211	N5
2212	L5
2213	O4
2214	M4
2215	I3
2216	K3
2217	J11
2218	J3
6100	B10

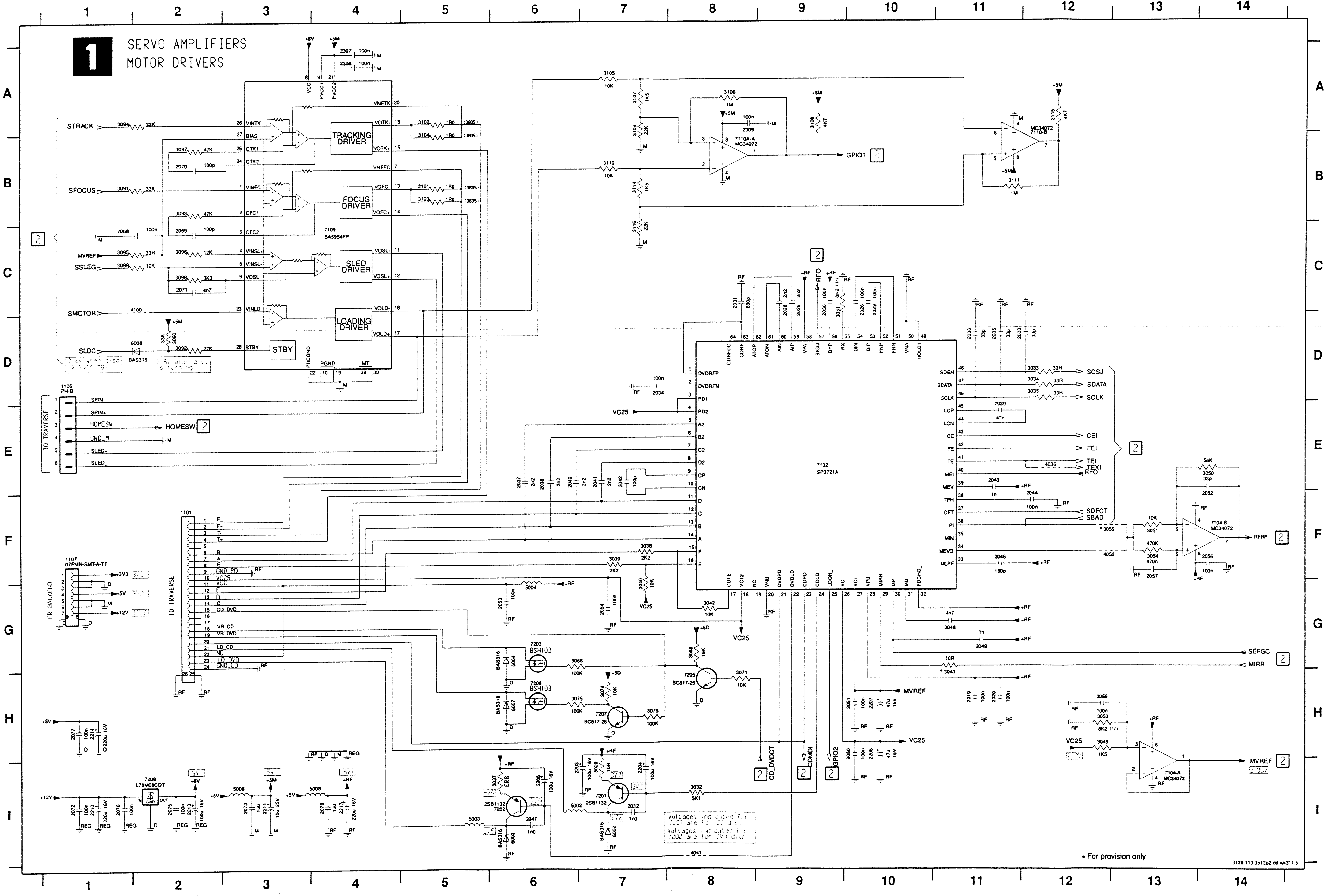
TOP VIEW - SMD & COMPONENT LAYOUT



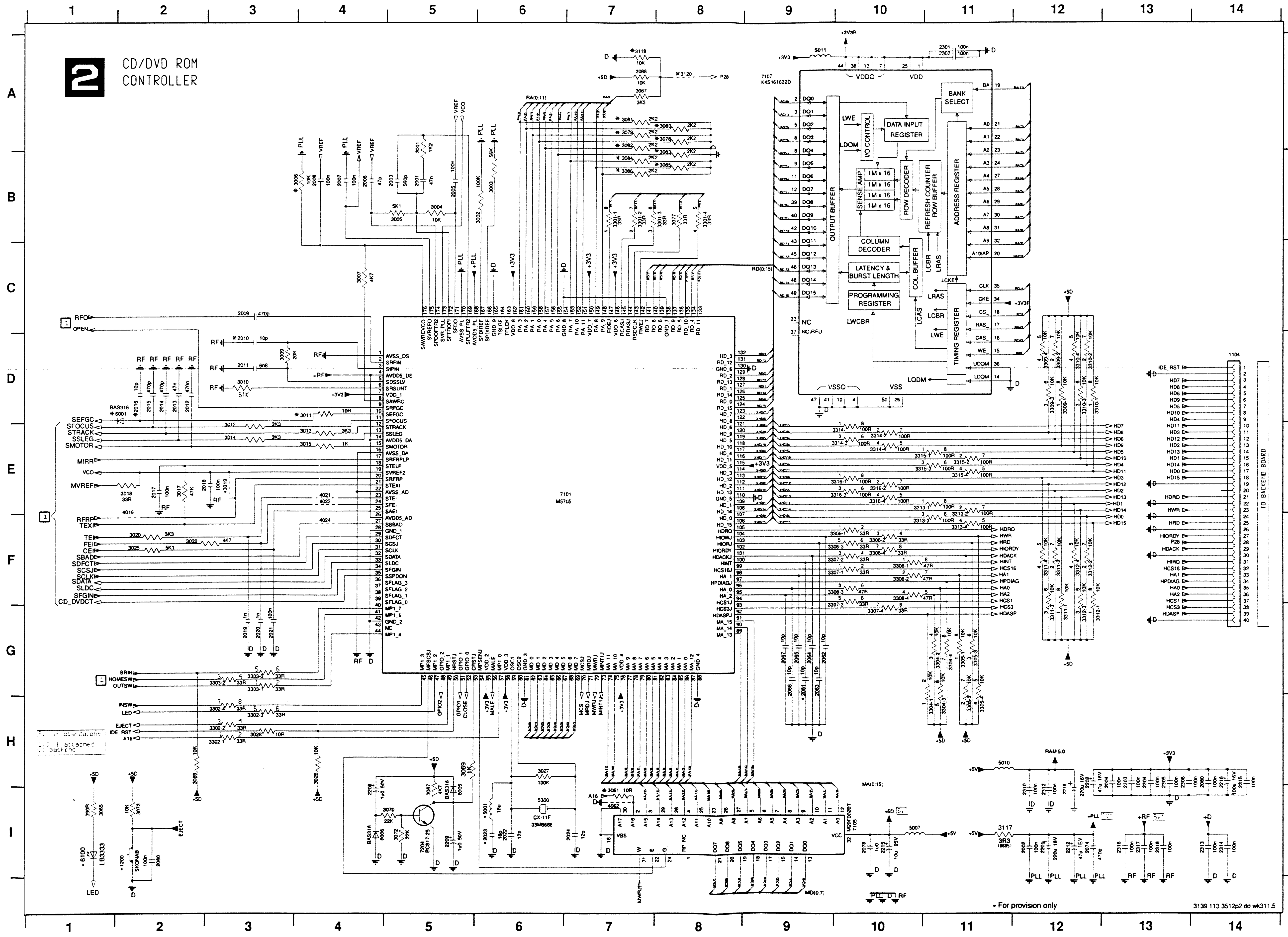
1101	O9
1102	G9
1103	B8
1104	F2
1105	I13
1106	M13
1107	M2
1200	B11
2001	I8
2002	H7
2003	I7
2004	G8
2005	I8
2006	H8
2007	I7
2008	I8
2009	I8
2010	G9
2011	G9
2012	E12
2013	E10
2014	D12
2015	C10
2016	G9
2017	F8
2018	F8
2019	F9
2020	F9
2021	E8
2022	D7
2023	D8
2024	D7
2025	L8
2026	K8
2028	L8
2029	K8
2030	L8
2031	M8
2032	N7
2033	J9
2034	M9
2035	J9
2036	J9
2037	M9
2038	M9
2039	J9
2040	M9
2041	M9
2042	M10
2043	J9
2044	J10
2046	J10
2047	O7
2048	J10
2049	J10
2050	L11
2051	K11
2052	M11
2053	N9
2054	N9
2055	O11
2056	M11
2057	M12
2058	B8
2059	B8
2060	C11
2061	E4
2062	F4
2063	E4
2064	D4
2065	E4
2066	E4
2067	D4
2068	D11
2069	D10
2070	D12
2071	D10
2072	M3
2073	M5
2074	L5
2075	F10
2076	O3
2077	M3
2078	K2
2079	M5
2080	L2
2201	J8
2202	H9
2203	M6
2204	O6
2205	O6
2206	M11
2207	L11
2208	E9
2209	D9
2210	N3
2211	N5
2212	L5
2213	O4
2214	M4
2215	I3
2216	K3
2217	J11
2218	J3
2301	K6
2302	J3
2303	H7
2304	H6
2305	F4
2306	D6
2307	F12
2308	F10
2309	H13
2310	J3
2311	I3
2312	J7
2313	C3
2314	B6
2315	D7
2316	G8
2317	G8
2318	E8
2319	K11
2320	L8
3001	I8
3002	H7
3003	I7
3004	H7
3005	I8
3006	I8
3007	H8
3009	G9
3010	G8
3011	G8
3012	D10
3013	D12
3014	E10
3015	D12
3017	F9
3018	F9
3019	F8
3020	F9
3022	F9
3025	E9
3026	H3
3027	D7
3028	I3
3029	N7
3031	K8
3032	O7
3033	J9
3034	J9
3035	J9
3037	O7
3038	N10
3039	N10
3040	N10
3042	M10
3043	J10
3049	M11
3050	M11
3051	M11
3053	O11
3054	M12
3055	K11
3057	B7
3058	C9
3059	B8
3060	B8
3061	C10
3063	B8
3064	C8
3065	C10
3066	M8
3067	D9
3068	M7
3069	E8
3070	D9
3071	L7
3072	D9
3073	C11
3074	M7
3075	M7
3076	M7
3077	H5
3078	K6
3079	K6
3080	K6
3081	K6
3082	I7
3083	I7
3084	J7
3085	J7
3086	J7
3087	B3
3088	C3
3089	B3
3090	D12
3091	D10
3092	D12
3093	D10
3094	D12
3095	D11
3096	D11
3097	D12
3098	D10
3099	E10
3101	G11
3102	G11
3103	G11
3104	G11
3105	H13
3106	G12
3107	G12
3108	G13
3109	G12
3110	H13
3111	I12
3114	H13
3115	I12
3116	H13
3117	L5
3118	B3
3119	B3
3120	B3
3121	L13
3301	H6
3302	C10
3303	C9
3304	C3
3305	E3
3306	F3
3307	D3
3308	D3
3309	H3
3310	G3
3311	G3
3312	F3
3313	F4
3314	H4
3315	G4
3316	F4
4016	F9
4021	F8
4023	F8
4024	E9
4036	F9
4041	P7
4044	N10
4052	L12
4056	B7
4062	C10
4100	E12
4122	J12
5001	D7
5002	O8
5003	O8
5004	N11
5006	M5
5007	L3
5008	M5
5010	K3
5011	K4
5300	C7
6001	I10
6002	N8
6003	O7
6004	M8
6005	D8
6006	D8
6007	N8
6008	C12
6100	B10
7101	F6
7102	L9
7104	N11
7105	C5
7107	J5
7108	I5
7109	E11
7110	H12
7111	K12
7201	N7
7202	O7
7203	N8
7204	D9
7205	M7
7206	N8
7207	M7
7208	O3

SERVO AMPLIFIERS & MOTOR DRIVERS CIRCUIT

1101	F2
1106	D1
1107	F1
2025	C9
2026	C10
2028	C9
2029	C10
2030	C9
2031	C8
2032	I7
2033	D11
2034	D7
2035	D11
2036	D11
2037	E6
2038	E6
2039	E11
2040	E6
2041	E7
2042	E7
2043	E11
2044	F12
2046	F11
2047	I6
2048	G11
2049	G11
2050	H10
2051	H10
2052	F14
2053	G6
2054	G7
2055	H12
2056	F14
2057	F13
2068	C1
2069	C2
2070	B2
2071	C2
2072	I1
2073	I3
2075	I2
2076	I1
2077	H1
2079	I4
2203	I6
2204	I7
2205	I6
2206	H10
2207	H10
2210	I1
2211	I3
2213	I2
2214	H1
2217	I4
2307	A4
2308	A4
2309	A8
2319	H11
2320	H11
3029	I7
3031	D9
3032	I8
3033	D12
3034	D12
3035	D12
3037	I6
3038	F7
3039	F7
3040	G7
3042	G8
3043	H11
3049	H12
3050	E14
3051	F13
3053	H12
3054	F13
3055	F12
3066	G6
3068	G8
3071	H8
3074	H7
3075	H6
3076	H7
3090	D2
3091	B1
3092	D2
3093	B2
3094	A1
3095	C1
3096	C2
3097	B2
3098	C2
3099	C1
3101	B5
3102	A5
3103	B5
3104	B5
3105	A7
3106	A8
3107	A7
3108	A9
3109	A7
3110	B7
3111	B11
3114	B7
3115	A12
3116	C7
4036	E12
4041	I8
4052	F12
4100	C2
5002	I6
5003	I5
5004	G6
5006	I3
5008	I4
6002	I7
6003	I6
6004	G6
6007	H6
6008	D2
7102	E9
7104-A	I13
7104-B	F14
7110-B	A12
7110A-A	B8
7201	I7
7202	I6
7203	G6
7205	H8
7206	H6
7207	H7
7208	I2


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
1
SERVO AMPLIFIERS
MOTOR DRIVERS
STRACK
SFOCUS
MVREF
SSLEG
SMOTOR
SLDC
TRACKING DRIVER
FOCUS DRIVER
SLED DRIVER
LOADING DRIVER
STBY
7109
BA5954FP
VINTK
BIAS
CTK1
CTK2
VINFC
CFC1
CFC2
VINSL+
VINSL-
VOSL
VINLD
VNFTK
VOTK-
VOTK+
VNFFC
VOFC-
VOFC+
VOSL-
VOSL+
VOLD-
VOLD+
VCC
PVCC1
PVCC2
PREGND
PGND
MT
+8V
+5M
BAS316
6008
1106
PH-B
SPIN-
SPIN+
HOMESW
GND_M
SLED+
SLED-
TO TRAVERSE
1107
07FMN-SMT-A-TF
FR BACKEND
+3V3
+5V
+12V
1101
F-
F+
T-
T+
GND_PD
VC25
VCC
CD_DVD
VR_CD
VR_DVD
LD_CD
NC
LD_DVD
GND_LD
7102
SP3721A
DVDRFP
DVDRFN
PD1
PD2
A2
B2
C2
D2
CP
CN
D
C
B
A
F
E
CDFDC
CDRF
ATOP
ATON
AIN
AIP
VPA
SIGO
BYP
RX
DIN
DIP
FNP
FNN
VNA
HOLD1
SDEN
SDATA
SCLK
LCP
LCN
CE
FE
TE
MEI
MEV
TPH
DFT
PI
MIN
MEVO
MLPF
CD1E
VC12
NC
VNB
DVDPD
DVDLD
CDPD
CDLD
LDON_
VC
VCI
VPB
MIRR
MP
MB
FDCHG_
SCSJ
SDATA
SCLK
CEI
FEI
TEI
TEXI
RFO
SDFCT
SBAD
RFO
7110A-A
MC34072
7110-B
MC34072
GPIO1
7104-B
MC34072
RFRP
SEFGC
MIRR
MVREF
VC25
7104-A
MC34072
MVREF
CD_DVDCT
DMDI
GPIO2
7203
BSH103
7206
BSH103
7205
BC817-25
7207
BC817-25
7202
2SB1132
7201
2SB1132
7208
L78M08CDT
+SD
REG
Voltages indicated for 7201 are for CD disc
Voltages indicated for 7202 are for DVD disc
• For provision only
3139 113 3512p2 dd wk311.5

CD/DVD ROM CONTROLLER CIRCUIT


2
CD/DVD ROM CONTROLLER
7101
M5705
7107
K4S161622D
BANK SELECT
DATA INPUT REGISTER
I/O CONTROL
SENSE AMP
1M x 16
ROW DECODER
REFRESH COUNTER ROW BUFFER
ADDRESS REGISTER
OUTPUT BUFFER
COLUMN DECODER
LATENCY & BURST LENGTH
PROGRAMMING REGISTER
COL BUFFER
TIMING REGISTER
VDDQ
VDD
VSSQ
VSS
7105
M29F002BT
1104
TO BACKEND BOARD
RFO
OPEN
SEFGC
SFOCUS
STRACK
SSLEG
SMOTOR
MIRR
VCO
MVREF
RFRP
TEXI
TE
FEI
CEI
SBAD
SDFCT
SCSJ
SCLK
SDATA
SLDC
SFGIN
CD_DVDCT
BRIN
HOMESW
OUTSW
INSW
LED
EJECT
IDE_RST
A16
HD0
HD1
HD2
HD3
HD4
HD5
HD6
HD7
HD8
HD9
HD10
HD11
HD12
HD13
HD14
HD15
HDRQ
HWR
HRD
HIORDY
HDACK
HINT
HCS16
HA0
HA1
HA2
HPDIAG
HCS1
HCS3
HDASP
RA(0:11)
RD(0:15)
MA(0:15)
MD(0:7)
PLL
VREF
+3V3
+5D
+5V
RAM 5.0
BAS316
BC817-25
CX-11F
33M8688
LB3333
SKQNAB

• For provision only

3139 113 3512p2 dd wk311.5

1104	D14
1200	I2
2001	B5
2002	I12
2003	B5
2004	H13
2005	B5
2006	B4
2007	B4
2008	B4
2009	C3
2010	D3
2011	D3
2012	D2
2013	D2
2014	D2
2015	D2
2016	D2
2017	E2
2018	E2
2019	G3
2020	G3
2021	G3
2022	I6
2023	I6
2024	I7
2060	I2
2061	G9
2062	G9
2063	G9
2064	G9
2065	G9
2066	G9
2067	G9
2074	I12
2078	I10
2080	H14
2201	I12
2202	H12
2208	I4
2209	I5
2212	I12
2215	I10
2216	H14
2218	I12
2301	A11
2302	A11
2303	H13
2304	H13
2305	H13
2306	H13
2310	I12
2312	I12
2313	I14
2314	I14
2315	H14
2316	I13
2317	I13
2318	I13
3001	A5
3002	B6
3003	B6
3004	B5
3005	B5
3006	B4
3007	C4
3009	D3
3010	D3
3011	D4
3012	E3
3013	E4
3014	E3
3015	E4
3017	E2
3018	E2
3019	E3
3020	F2
3022	F2
3025	F2
3026	H4
3027	H6
3028	H3
3061	I7
3065	I1
3067	I5
3069	H5
3070	I5
3072	I5
3073	I2
3077	B8
3078	A8
3079	A7
3080	A8
3081	A7
3082	A7
3083	B8
3084	B7
3085	B8
3086	B7
3087	A7
3088	A7
3089	H2
3117	I11
3118	A7
3120	A8
3301-1	B7
3301-2	B7
3301-3	B8
3301-4	B8
3302-1	H3
3302-2	H3
3302-3	H3
3302-4	H3
3303-1	G3
3303-2	G3
3303-3	G3
3304-1	G11
3304-2	G11
3304-3	G11
3304-4	G11
3305-1	G11
3305-2	H11
3305-3	G11
3305-4	H11
3306-1	F10
3306-2	F10
3306-3	F10
3306-4	F10
3307-1	F10
3307-2	F10
3307-3	G10
3307-4	G10
3308-1	F10
3308-2	F10
3308-3	F10
3308-4	F10
3309-1	D12
3309-2	D12
3309-3	D12
3309-4	D12
3310-1	D12
3310-2	D12
3310-3	D12
3310-4	D12
3311-1	G12
3311-2	F12
3311-3	G12
3311-4	F12
3312-1	G12
3312-2	F12
3312-3	G12
3312-4	F12
3313-1	E10
3313-2	F11
3313-3	F10
3313-4	F11
3314-1	E10
3314-2	E10
3314-3	E10
3314-4	E10
3315-1	E10
3315-2	E11
3315-3	E10
3315-4	E11
3316-1	E10
3316-2	E10
3316-3	E10
3316-4	E10
4016	F2
4021	E4
4023	E4
4024	F4
4062	I7
5001	I6
5007	I10
5010	H11
5011	A9
5300	I6
6001	D2
6005	I5
6006	I4
6100	I1
7101	E7
7105	I10
7204	I5

ELECTRICAL PARTS LIST - MONO-FE BOARD

RESISTORS

3311	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
3312	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
3313	3198 031 11010	RST NETWORK 4 X 100R 5% 1206
3314	3198 031 11010	RST NETWORK 4 X 100R 5% 1206
3315	3198 031 11010	RST NETWORK 4 X 100R 5% 1206
3316	3198 031 11010	RST NETWORK 4 X 100R 5% 1206
4016	4822 051 30008	0R JUMPER 0603
4021	4822 051 30008	0R JUMPER 0603
4023	4822 051 30008	0R JUMPER 0603
4024	4822 051 30008	0R JUMPER 0603
4036	4822 051 30008	0R JUMPER 0603
4041	4822 051 30008	0R JUMPER 0603
4044	4822 051 30008	0R JUMPER 0603
4052	4822 051 30008	0R JUMPER 0603
4056	4822 051 30008	0R JUMPER 0603
4062	4822 051 30008	0R JUMPER 0603
4100	4822 051 30008	0R JUMPER 0603

COILS & FILTERS

5002	4822 157 71206	IND FXD 100MHZ 600R
5003	4822 157 71206	IND FXD 100MHZ 600R
5004	4822 157 71206	IND FXD 100MHZ 600R
5006	4822 157 71206	IND FXD 100MHZ 600R
5007	4822 157 71206	IND FXD 100MHZ 600R
5008	4822 157 71206	IND FXD 100MHZ 600R
5010	4822 157 71206	IND FXD 100MHZ 600R
5011	4822 157 71206	IND FXD 100MHZ 600R
5300	4822 242 10757	X'TAL RESONATOR 33,868MHZ 20P

DIODES

6002	4822 130 11397	BAS316
6003	4822 130 11397	BAS316
6004	4822 130 11397	BAS316
6005	4822 130 11397	BAS316
6006	4822 130 11397	BAS316
6007	4822 130 11397	BAS316
6008	4822 130 11397	BAS316

TRANSISTORS & INTEGRATED CIRCUITS

7101	9322 186 11671	M5705
7102	9322 185 60671	SP3721AAA0PM
7104	4822 209 32073	MC34072D
7105	9965 000 19029	M29F002BT-70K1 with SW program
7107	9322 159 55668	K4S161622D-TC70
7109	9322 187 63668	BA5954FP
7110	4822 209 32073	MC34072D
7201	4822 130 11565	2SB1132
7202	4822 130 11565	2SB1132
7203	9340 547 13215	BSH103
7204	4822 130 42804	BC817-25
7205	4822 130 42804	BC817-25
7206	9340 547 13215	BSH103
7207	4822 130 42804	BC817-25
7208	9322 163 24668	L78M08CDT

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS LIST - MONO-FE BOARD

MISCELLANEOUS

	3139 118 56941	FE (Front End) PCB Assembly CD222
1101	2422 025 17529	FFC Socket 24P Hort.
1104	2422 025 17371	FFC Socket 40P Hort.
1107	2422 025 16806	FFC Socket 7P Hort.

CAPACITORS

2001	3198 017 34730	47nF 16V
2002	2238 586 59812	100nF 50V
2003	4822 126 14249	560pF 10% 50V
2004	2238 586 59812	100nF 50V
2005	2238 586 59812	100nF 50V
2006	4822 126 11785	47pF 5% 50V
2007	2238 586 59812	100nF 50V
2008	2238 586 59812	100nF 50V
2009	4822 126 13881	470pF 5% 50V
2011	5322 126 11582	6,8nF 10% 63V
2012	3198 017 44740	470nF 10V
2013	3198 017 34730	47nF 16V
2014	4822 126 13881	470pF 5% 50V
2015	4822 126 13881	470pF 5% 50V
2017	2238 586 59812	100nF 50V
2018	2238 586 59812	100nF 50V
2019	3198 016 31020	1nF 25V
2020	3198 016 31020	1nF 25V
2021	2238 586 59812	100nF 50V
2022	4822 126 11663	12pF 50V
2024	4822 126 11663	12pF 50V
2025	4822 126 14238	2,2nF 50V
2026	2238 586 59812	100nF 50V
2028	4822 126 14238	2,2nF 50V
2029	2238 586 59812	100nF 50V
2030	2238 586 59812	100nF 50V
2031	3198 016 36810	680pF 25V
2032	3198 016 31020	1nF 25V
2033	2222 867 15339	33pF 5% 50V
2034	2238 586 59812	100nF 50V
2035	2222 867 15339	33pF 5% 50V
2036	2222 867 15339	33pF 5% 50V
2037	4822 126 14238	2,2nF 50V
2038	4822 126 14238	2,2nF 50V
2039	3198 017 34730	47nF 16V
2040	4822 126 14238	2,2nF 50V
2041	4822 126 14238	2,2nF 50V
2042	2020 552 94427	100pF 5% 50V
2043	3198 016 31020	1nF 25V
2044	2238 586 59812	100nF 50V
2046	4822 126 14508	180pF 5% 50V
2047	3198 016 31020	1nF 25V
2048	4822 126 13193	4,7nF 10% 63V
2049	3198 016 31020	1nF 25V
2050	2238 586 59812	100nF 50V
2051	2238 586 59812	100nF 50V
2052	2222 867 15339	33pF 5% 50V
2053	2238 586 59812	100nF 50V
2054	2238 586 59812	100nF 50V
2055	2238 586 59812	100nF 50V
2056	2238 586 59812	100nF 50V
2057	3198 017 44740	470nF 10V
2058	4822 126 11785	47pF 5% 50V
2059	4822 126 11785	47pF 5% 50V
2060	2238 586 59812	100nF 50V
2062	4822 122 33741	10pF 10% 50V
2063	4822 122 33741	10pF 10% 50V
2064	4822 122 33741	10pF 10% 50V
2065	4822 122 33741	10pF 10% 50V
2066	4822 122 33741	10pF 10% 50V
2067	4822 122 33741	10pF 10% 50V
2068	2238 586 59812	100nF 50V
2069	2020 552 94427	100pF 5% 50V
2070	2020 552 94427	100pF 5% 50V
2071	4822 126 13193	4,7nF 10% 63V
2072	2238 586 59812	100nF 50V
2073	3198 017 41050	1uF 10V
2074	4822 126 13881	470pF 5% 50V
2075	2238 586 59812	100nF 50V
2076	2238 586 59812	100nF 50V
2077	2238 586 59812	100nF 50V
2078	3198 017 41050	1uF 10V
2079	3198 017 41050	1uF 10V
2080	2238 586 59812	100nF 50V
2201	2022 020 00625	220uF 20% 16V
2202	4822 124 80231	47uF 20% 16V
2203	4822 124 23052	100uF 20% 16V
2204	4822 124 23052	100uF 20% 16V
2205	4822 124 23052	100uF 20% 16V
2206	4822 124 80231	47uF 20% 16V
2207	4822 124 80231	47uF 20% 16V
2208	4822 124 22651	1uF 20% 50V
2209	4822 124 22651	1uF 20% 50V
2210	2022 020 00625	220uF 20% 16V
2211	4822 124 21732	10uF 20% 25V
2212	4822 124 80231	47uF 20% 16V
2213	4822 124 23052	100uF 20% 16V
2214	2022 020 00625	220uF 20% 16V
2215	4822 124 21732	10uF 20% 25V
2216	4822 124 23052	100uF 20% 16V
2217	2022 020 00625	220uF 20% 16V
2218	2022 020 00625	220uF 20% 16V
2301	2238 586 59812	100nF 50V
2302	2238 586 59812	100nF 50V
2303	2238 586 59812	100nF 50V
2304	2238 586 59812	100nF 50V
2305	2238 586 59812	100nF 50V
2306	2238 586 59812	100nF 50V

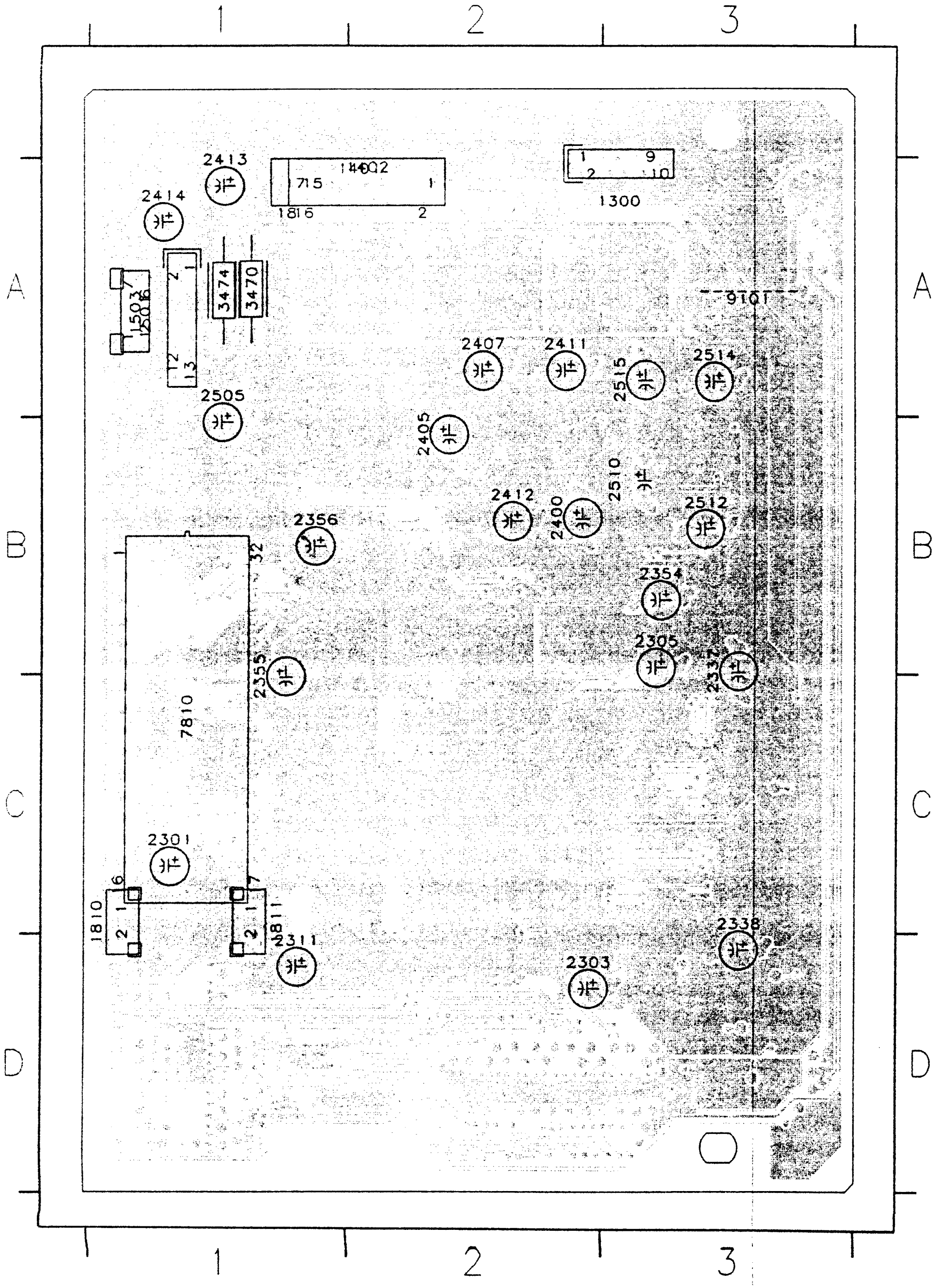
ELECTRICAL PARTS LIST - MONO-FE BOARD

2307	2238 586 59812	100nF 50V
2308	2238 586 59812	100nF 50V
2309	2238 586 59812	100nF 50V
2310	2238 586 59812	100nF 50V
2312	2238 586 59812	100nF 50V
2313	2238 586 59812	100nF 50V
2314	2238 586 59812	100nF 50V
2315	2238 586 59812	100nF 50V
2316	2238 586 59812	100nF 50V
2317	2238 586 59812	100nF 50V
2318	2238 586 59812	100nF 50V
2319	2238 586 59812	100nF 50V
2320	2238 586 59812	100nF 50V

RESISTORS

3001	4822 117 11817	1k2 1% 1/16W
3002	4822 117 13632	100k 1% 0,062W
3003	4822 051 30563	56k 5% 0,062W
3004	4822 051 30103	10k 5% 0,062W
3005	2322 704 65102	5k1 1% 0,062W
3007	4822 051 30472	4k7 5% 0,062W
3009	2322 704 62003	20k 1% 0,062W
3010	2322 704 65103	51k 1% 0,062W
3012	4822 051 30332	3k3 5% 0,062W
3013	4822 051 30332	3k3 5% 0,062W
3014	4822 051 30332	3k3 5% 0,062W
3015	4822 051 30102	1k 5% 0,062W
3017	4822 117 12925	47k 1% 0.063W
3018	4822 051 30339	33R 5% 0,062W
3020	4822 051 30332	3k3 5% 0,062W
3022	4822 051 30472	4k7 5% 0,062W
3025	2322 704 65102	5k1 1% 0,062W
3026	4822 051 30103	10k 5% 0,062W
3027	4822 117 13632	100k 1% 0,062W
3028	4822 051 30109	10R 5% 0,062W
3029	4822 051 30109	10R 5% 0,062W
3031	5322 117 13056	8k2 1% 0,063W
3032	2322 704 65102	5k1 1% 0,062W
3033	4822 051 30339	33R 5% 0,062W
3034	4822 051 30339	33R 5% 0,062W
3035	4822 051 30339	33R 5% 0,062W
3037	2322 702 60688	6R8 5% 0.062W
3038	4822 051 30222	2k2 5% 0,062W
3039	4822 051 30222	2k2 5% 0,062W
3040	4822 051 30103	10k 5% 0,062W
3042	4822 051 30103	10k 5% 0,062W
3049	4822 051 30152	1k5 5% 0,062W
3050	4822 051 30563	56k 5% 0,062W
3051	4822 051 30103	10k 5% 0,062W
3053	5322 117 13056	8k2 1% 0,063W
3054	4822 051 30474	470k 5% 0,062W
3059	4822 051 30339	33R 5% 0,062W
3060	4822 051 30339	33R 5% 0,062W
3065	4822 051 30391	390R 5% 0,062W
3066	4822 117 13632	100k 1% 0,062W
3067	4822 051 30472	4k7 5% 0,062W
3068	4822 051 30103	10k 5% 0,062W
3069	4822 051 30102	1k 5% 0,062W
3070	4822 051 30223	22k 5% 0,062W
3071	4822 051 30103	10k 5% 0,062W
3072	4822 051 30223	22k 5% 0,062W
3073	4822 051 30103	10k 5% 0,062W
3074	4822 051 30103	10k 5% 0,062W
3075	4822 117 13632	100k 1% 0,062W
3076	4822 117 13632	100k 1% 0,062W
3077	4822 051 30339	33R 5% 0,062W
3087	4822 051 30332	3k3 5% 0,062W
3088	4822 051 30103	10k 5% 0,062W
3089	4822 051 30103	10k 5% 0,062W
3090	4822 051 30333	33k 5% 0,062W
3091	4822 051 30333	33k 5% 0,062W
3092	4822 051 30223	22k 5% 0,062W
3093	4822 117 12925	47k 1% 0.063W
3094	4822 051 30333	33k 5% 0,062W
3095	4822 051 30339	33R 5% 0,062W
3096	4822 051 30123	12k 5% 0,062W
3097	4822 117 12925	47k 1% 0.063W
3098	4822 051 30332	3k3 5% 0,062W
3099	4822 051 30103	10k 5% 0,062W
3101	4822 051 20108	1R 5% 0,1W
3102	4822 051 20108	1R 5% 0,1W
3103	4822 051 20108	1R 5% 0,1W
3104	4822 051 20108	1R 5% 0,1W
3105	4822 051 30103	10k 5% 0,062W
3106	4822 051 30105	1M 5% 0,062W
3107	4822 051 30152	1k5 5% 0,062W
3108	4822 051 30472	4k7 5% 0,062W
3109	4822 051 30223	22k 5% 0,062W
3110	4822 051 30103	10k 5% 0,062W
3111	4822 051 30105	1M 5% 0,062W
3114	4822 051 30152	1k5 5% 0,062W
3115	4822 051 30472	4k7 5% 0,062W
3116	4822 051 30223	22k 5% 0,062W
3117	4822 051 20338	3R30 5% 0,1W
3301	4822 117 13576	RES NETWORK 4 X 33R 5% 1206
3302	4822 117 13576	RES NETWORK 4 X 33R 5% 1206
3303	4822 117 13576	RES NETWORK 4 X 33R 5% 1206
3304	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
3305	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
3306	4822 117 13576	RES NETWORK 4 X 33R 5% 1206
3307	4822 117 13576	RES NETWORK 4 X 33R 5% 1206
3308	4822 117 13573	RES NETWORK 4 X 47R 5% 1206
3309	4822 117 13578	RES NETWORK 4 X 10k 5% 1206
3310	4822 117 13578	RES NETWORK 4 X 10k 5% 1206

BOTTOM VIEW - COMPONENT LAYOUT


1
2
3
A
B
C
D
2413
2414
1402
1401
1300
1503
1501
3474
3470
9101
2407
2411
2515
2514
2505
2405
2510
2412
2400
2512
2356
2354
2305
2337
2355
7810
2301
1810
1811
2311
2303
2338

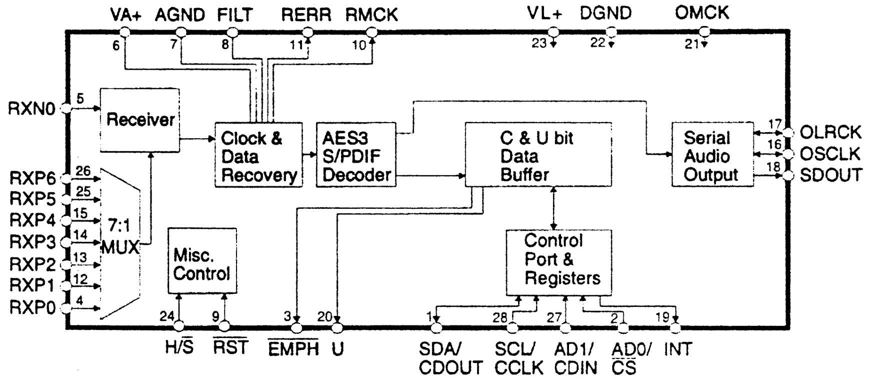
1300	A3
1401	A2
1402	A2
1501	A1
1503	A1
1810	C1
1811	C1
2301	C1
2303	D2
2305	B3
2311	D1
2337	B3
2338	C3
2354	B3
2355	C1
2356	B1
2400	B2
2405	B2
2407	A2
2411	A2
2412	B2
2413	A1
2414	A1
2505	A1
2510	B3
2512	B3
2514	A3
2515	A3
3470	A1
3474	A1
7810	C1
9101	A3

MONO-BE BOARD

TABLE OF CONTENTS

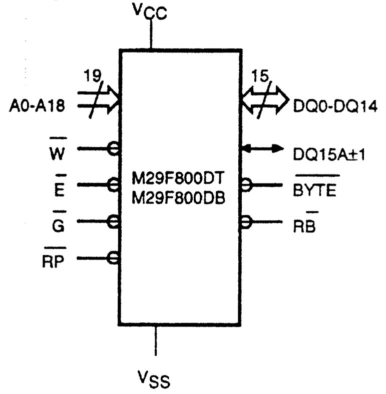
CS8415A & M29F800DT Internal Block Diagram 12-1
Bottom View - Component Layout 12-2
Top View - SMDs & Component Layout.. 12-3
Top View - SMDs & Component Layout Part A 12-4
Top View - SMDs & Component Layout Part B 12-5
Circuit Diagram 1 12-6
Circuit Diagram 2 12-7
Circuit Diagram 3 12-8
Electrical parts list 12-9

CS8415A


VA+
AGND
FILT
RERR
RMCK
VL+
DGND
OMCK
6
7
8
11
10
23
22
21
RXN0
5
Receiver
Clock & Data Recovery
AES3 S/PDIF Decoder
C & U bit Data Buffer
Serial Audio Output
17
16
18
OLRCK
OSCLK
SDOUT
RXP6
RXP5
RXP4
RXP3
RXP2
RXP1
RXP0
26
25
15
14
13
12
4
7:1 MUX
Misc. Control
Control Port & Registers
24
9
3
20
1
28
27
2
19
H/S
RST
EMPH
U
SDA/ CDOUT
SCL/ CCLK
AD1/ CDIN
AD0/ CS
INT

M29F800DT

Logic Diagram


VCC
19
A0-A18
15
DQ0-DQ14
W
DQ15A±1
E
M29F800DT
M29F800DB
BYTE
G
RB
RP
VSS

Pins connection

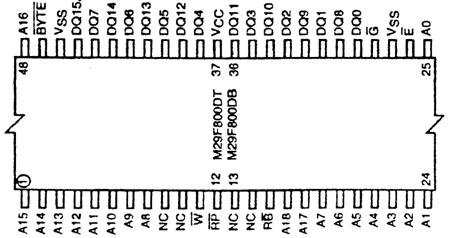
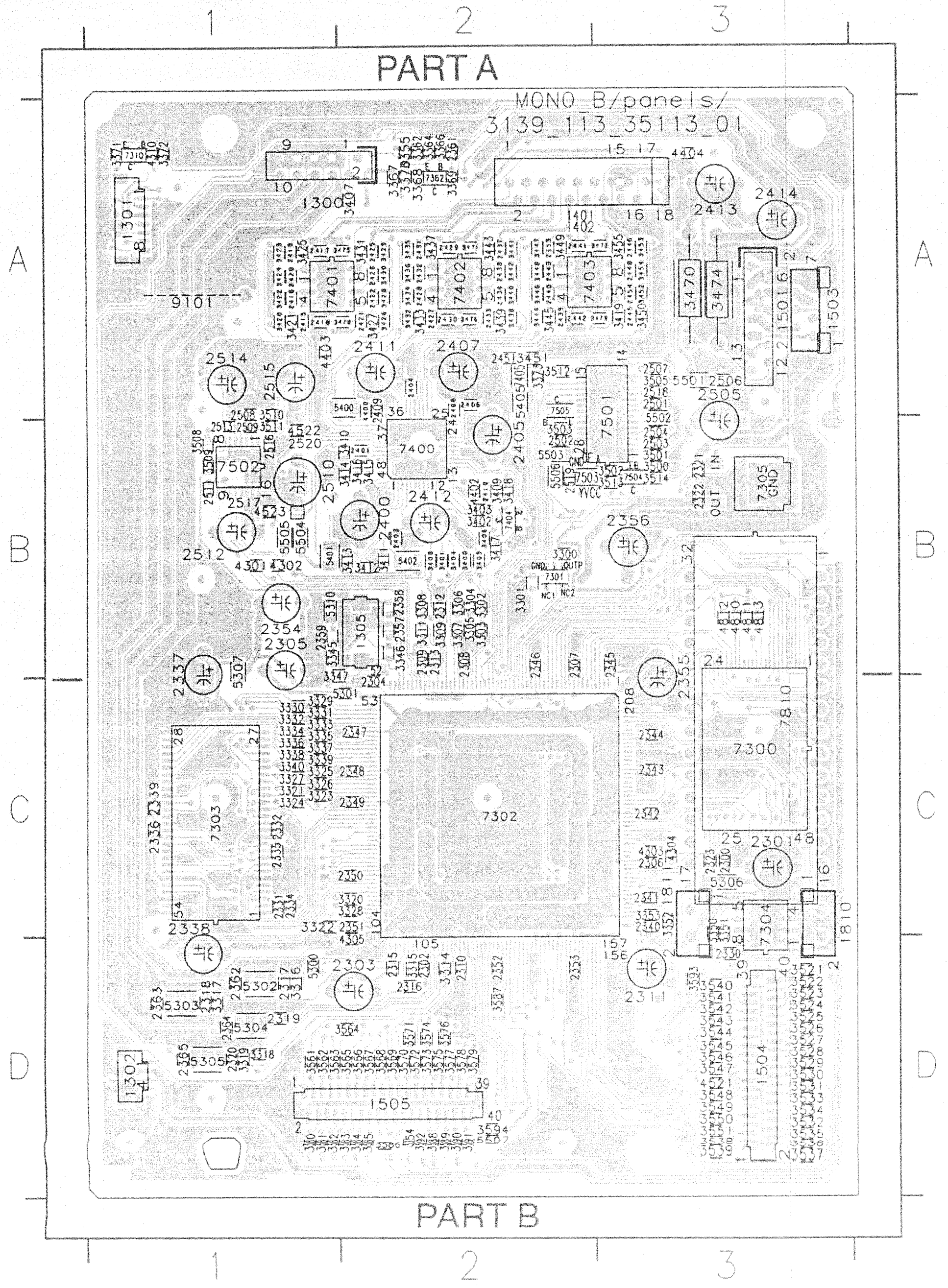

A16
BYTE
VSS
DQ15A–1
DQ7
DQ14
DQ6
DQ13
DQ5
DQ12
DQ4
VCC
DQ11
DQ3
DQ10
DQ2
DQ9
DQ1
DQ8
DQ0
G
VSS
E
A0
48
37
36
25
M29F800DT
M29F800DB
1
12
13
24
A15
A14
A13
A12
A11
A10
A9
A8
NC
NC
W
RP
NC
NC
RB
A18
A17
A7
A6
A5
A4
A3
A2
A1

Table 1. Signal Names

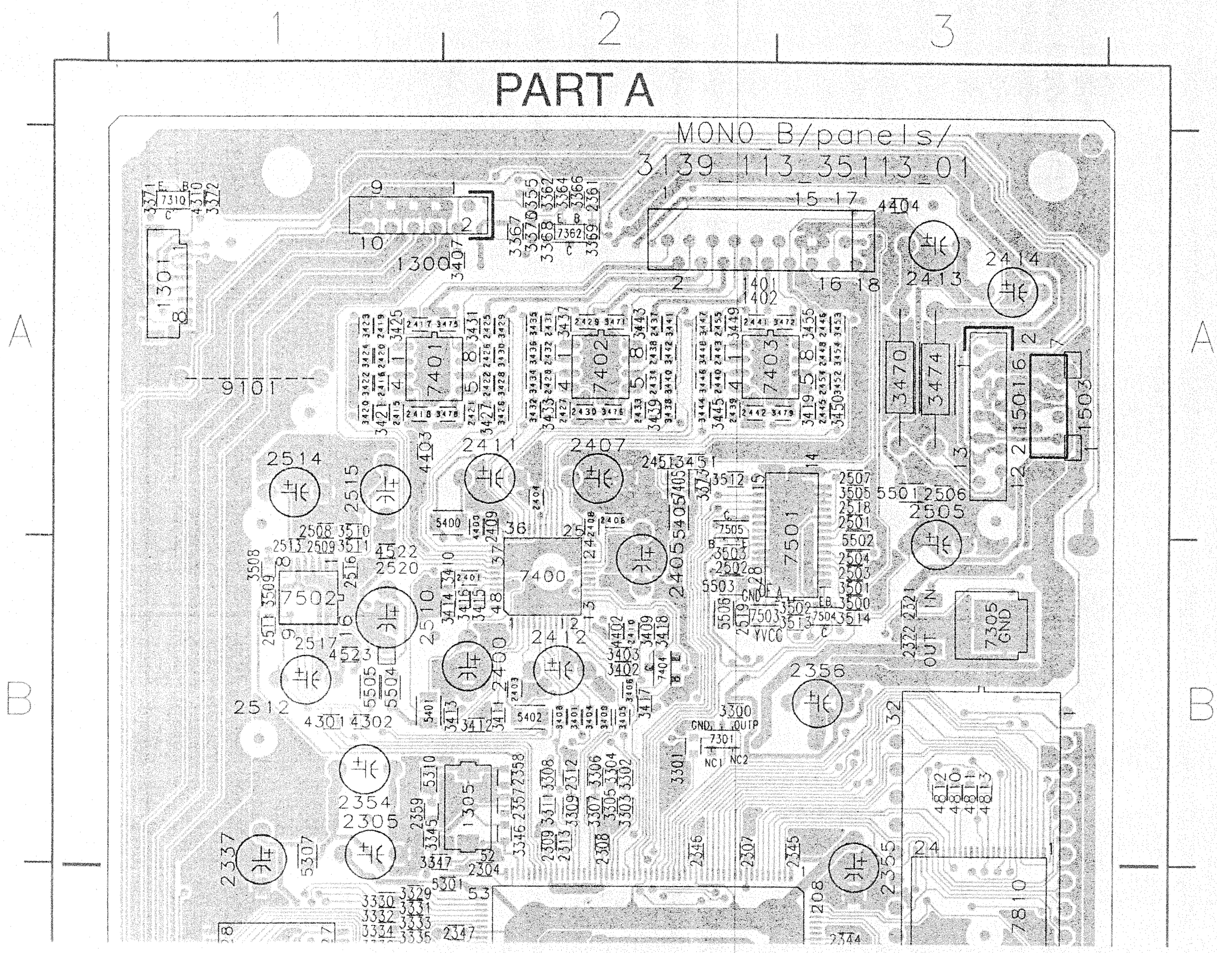
A0-A18	Address Inputs
DQ0-DQ7	Data Inputs/Outputs
DQ8-DQ14	Data Inputs/Outputs
DQ15A±1	Data Input/Output or Address Input
E	Chip Enable
G	Output Enable
W	Write Enable
RP	Reset/Block Temporary Unprotect
RB	Ready/Busy Output (not available on SO44 package)
BYTE	Byte/Word Organization Select
V_{CC}	Supply Voltage
V_{SS}	Ground
NC	Not Connected Internally

TOP VIEW - SMD & COMPONENT LAYOUT

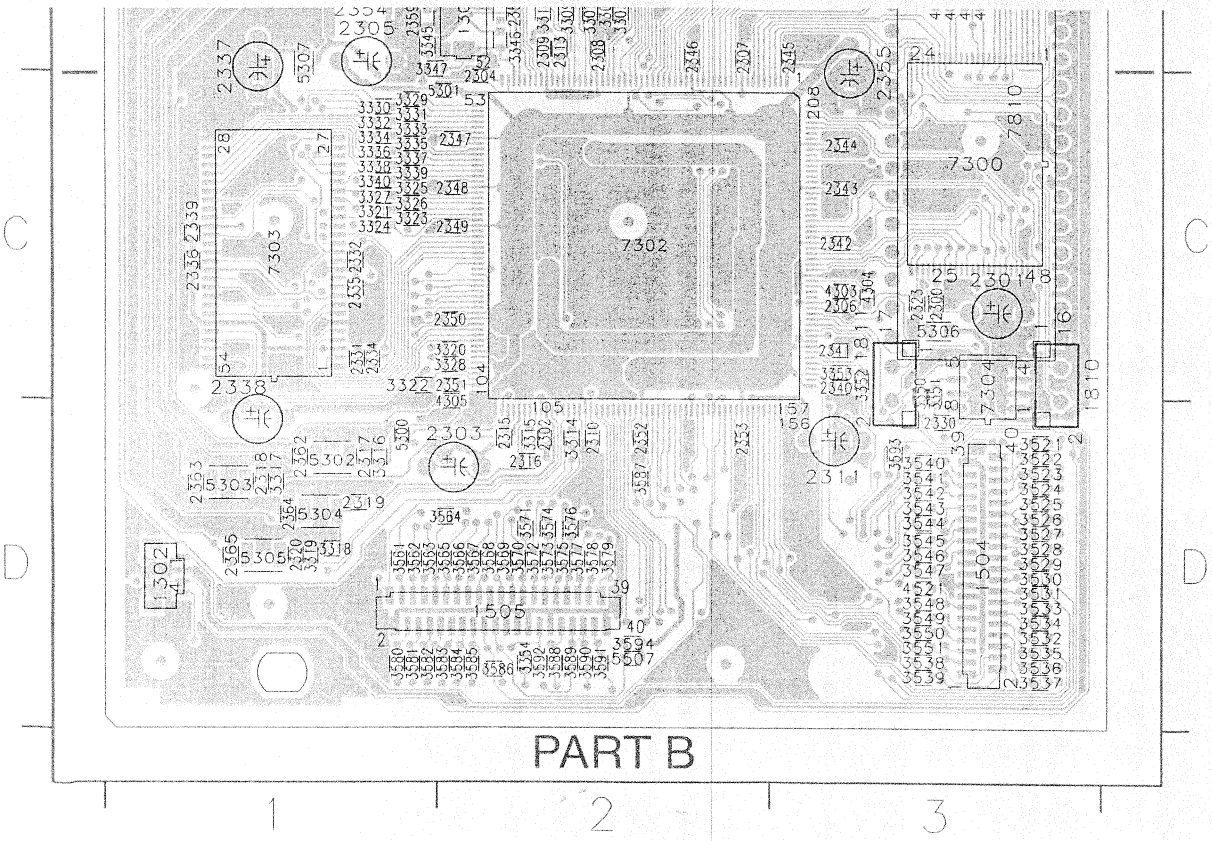


1300	A1	2411	A2	3327	C1	3446	A2	3579	D2
1301	A1	2412	B2	3328	C2	3447	A2	3580	D1
1302	D1	2413	A3	3329	C1	3448	A2	3581	D1
1305	B2	2414	A3	3330	C1	3449	A2	3582	D1
1401	A2	2415	A1	3331	C1	3450	A3	3583	D2
1402	A2	2416	A1	3332	C1	3451	A2	3584	D2
1501	A3	2417	A1	3333	C1	3452	A3	3585	D2
1503	A3	2418	A1	3334	C1	3453	A3	3586	D2
1504	D3	2419	A1	3335	C1	3454	A3	3587	D2
1505	D2	2420	A1	3336	C1	3455	A3	3588	D2
1810	C3	2421	A2	3337	C1	3470	A3	3589	D2
1811	C3	2422	A2	3338	C1	3471	A2	3590	D2
2300	C3	2425	A2	3339	C1	3472	A3	3591	D2
2301	C3	2426	A2	3340	C1	3474	A3	3592	D2
2302	D2	2427	A2	3345	B1	3475	A2	3593	D3
2303	D2	2428	A2	3346	B2	3476	A2	3594	D2
2304	C2	2429	A2	3347	B1	3478	A2	4301	B1
2305	B1	2430	A2	3350	C3	3479	A3	4302	B1
2306	C3	2431	A2	3351	C3	3500	B3	4303	C3
2307	B2	2432	A2	3352	C3	3501	B3	4304	C3
2308	B2	2433	A2	3353	C3	3502	B3	4305	D2
2309	B2	2434	A2	3354	D2	3503	B2	4310	A1
2310	D2	2437	A2	3355	A2	3505	A3	4400	A2
2311	D3	2438	A2	3362	A2	3508	B1	4402	B2
2312	B2	2439	A2	3364	A2	3509	B1	4403	A1
2313	B2	2440	A2	3366	A2	3510	A1	4404	A3
2315	D2	2441	A2	3367	A2	3511	B1	4521	D3
2316	D2	2442	A2	3368	A2	3512	A2	4522	B1
2317	D1	2443	A2	3369	A2	3513	B3	4523	B1
2318	D1	2445	A3	3370	A2	3514	B3	4810	B3
2319	D1	2446	A3	3371	A1	3521	D3	4811	B3
2320	D1	2448	A3	3372	A1	3522	D3	4812	B3
2321	B3	2451	A2	3373	A2	3523	D3	4813	B3
2322	B3	2454	A3	3400	B2	3524	D3	5300	D1
2323	C3	2455	A2	3401	B2	3525	D3	5301	C2
2330	D3	2501	A3	3402	B2	3526	D3	5302	D1
2331	C1	2502	B2	3403	B2	3527	D3	5303	D1
2332	C1	2503	B3	3404	B2	3528	D3	5304	D1
2334	C1	2504	B3	3405	B2	3529	D3	5305	D1
2335	C1	2505	A3	3406	B2	3530	D3	5306	C3
2336	C1	2506	A3	3407	A2	3531	D3	5307	B1
2337	B1	2507	A3	3408	B2	3532	D3	5310	B1
2338	C1	2508	A1	3409	B2	3533	D3	5400	A2
2339	C1	2509	B1	3410	B2	3534	D3	5401	B1
2340	C3	2510	B1	3411	B2	3535	D3	5402	B2
2341	C3	2511	B1	3412	B2	3536	D3	5405	A2
2342	C3	2512	B1	3413	B2	3537	D3	5501	A3
2343	C3	2513	B1	3414	B2	3538	D3	5502	B3
2344	C3	2514	A1	3415	B2	3539	D3	5503	B2
2345	B3	2515	A1	3416	B2	3540	D3	5504	B1
2346	B2	2516	B1	3417	B2	3541	D3	5505	B1
2347	C2	2517	B1	3418	B2	3542	D3	5506	B2
2348	C2	2518	A3	3419	A3	3543	D3	5507	D2
2349	C2	2519	B2	3420	A1	3544	D3	7300	C3
2350	C2	2520	B1	3421	A1	3545	D3	7301	B2
2351	C2	3300	B2	3422	A1	3546	D3	7302	C2
2352	D2	3301	B2	3423	A1	3547	D3	7303	C1
2353	D2	3302	B2	3424	A1	3548	D3	7304	C3
2354	B1	3303	B2	3425	A1	3549	D3	7305	B3
2355	C3	3304	B2	3426	A2	3550	D3	7310	A1
2356	B3	3305	B2	3427	A2	3551	D3	7362	A2
2357	B2	3306	B2	3428	A2	3561	D1	7400	B2
2358	B2	3307	B2	3429	A2	3562	D1	7401	A1
2359	B1	3308	B2	3430	A2	3563	D1	7402	A2
2361	A2	3309	B2	3431	A2	3564	D2	7403	A2
2362	D1	3311	B2	3432	A2	3565	D2	7404	B2
2363	D1	3314	D2	3433	A2	3566	D2	7405	A2
2364	D1	3315	D2	3434	A2	3567	D2	7501	B3
2365	D1	3316	D1	3435	A2	3568	D2	7502	B1
2400	B2	3317	D1	3436	A2	3569	D2	7503	B2
2401	B2	3318	D1	3437	A2	3570	D2	7504	B3
2403	B2	3319	D1	3438	A2	3571	D2	7505	A2
2404	A2	3320	C2	3439	A2	3572	D2	7810	C3
2405	B2	3321	C1	3440	A2	3573	D2	9101	A1
2406	A2	3322	C1	3441	A2	3574	D2		
2407	A2	3323	C1	3442	A2	3575	D2		
2408	A2	3324	C1	3443	A2	3576	D2		
2409	A2	3325	C1	3444	A2	3577	D2		
2410	B2	3326	C1	3445	A2	3578	D2		

TOP VIEW - SMD & COMPONENT LAYOUT PART A

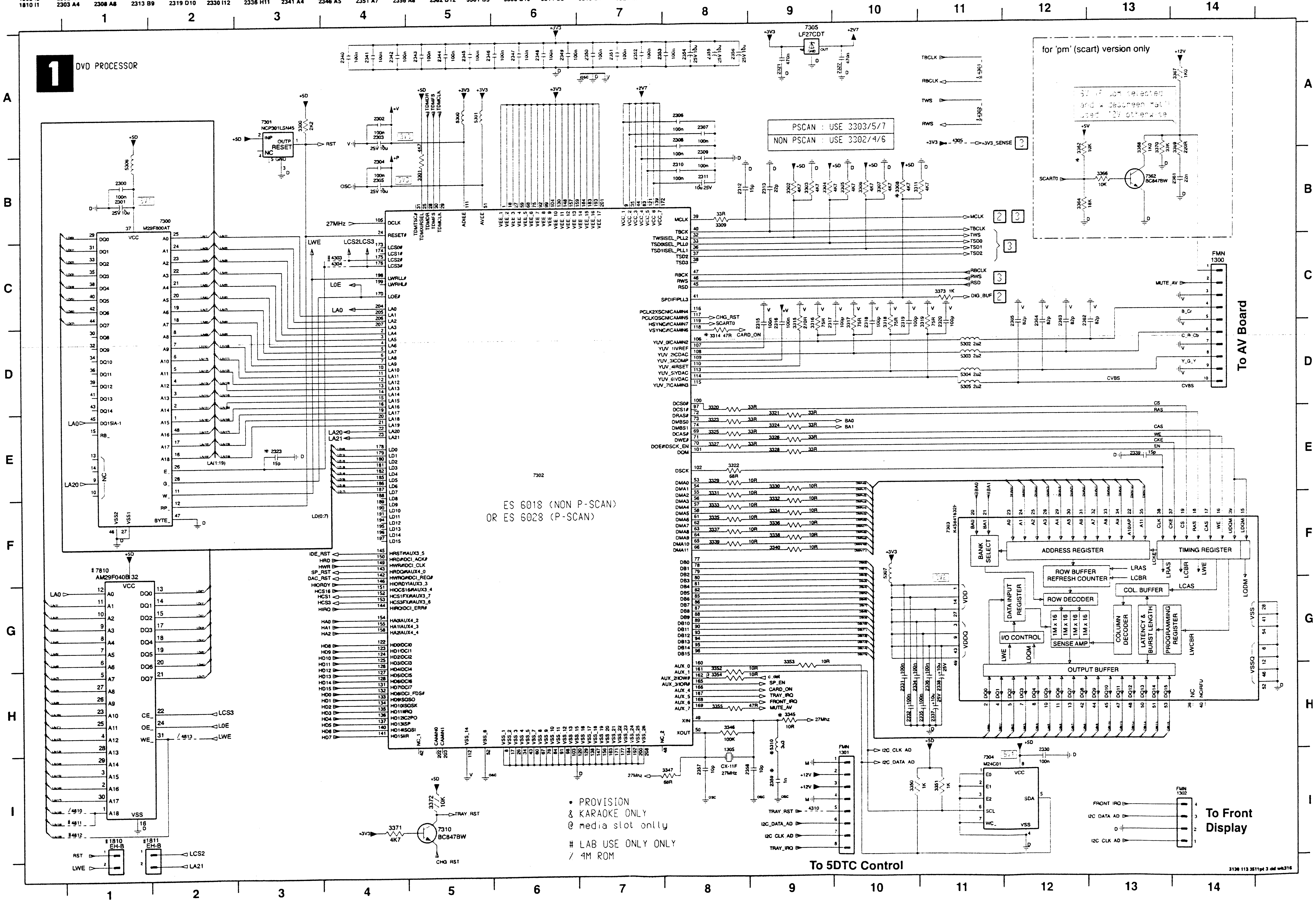

1
2
3
PART A
MONO B/panels/
3139_113_35113_01
A
B
1300
1301
1401
1402
1501
1503
7401
7402
7403
7400
7501
7502
7305
7310
7362
7301
9101
4404
2413
2414
2411
2407
2514
2515
2510
2512
2520
2354
2305
2337
2355
2356
3470
3474
1305
7810

TOP VIEW - SMD & COMPONENT LAYOUT PART B


C
D
1
2
3
PART B
7302
7303
7300
7304
7810
1302
1504
1505
2337
2305
2355
2338
2303
2311
5302
5303
5304
5305
5306
5307
5507

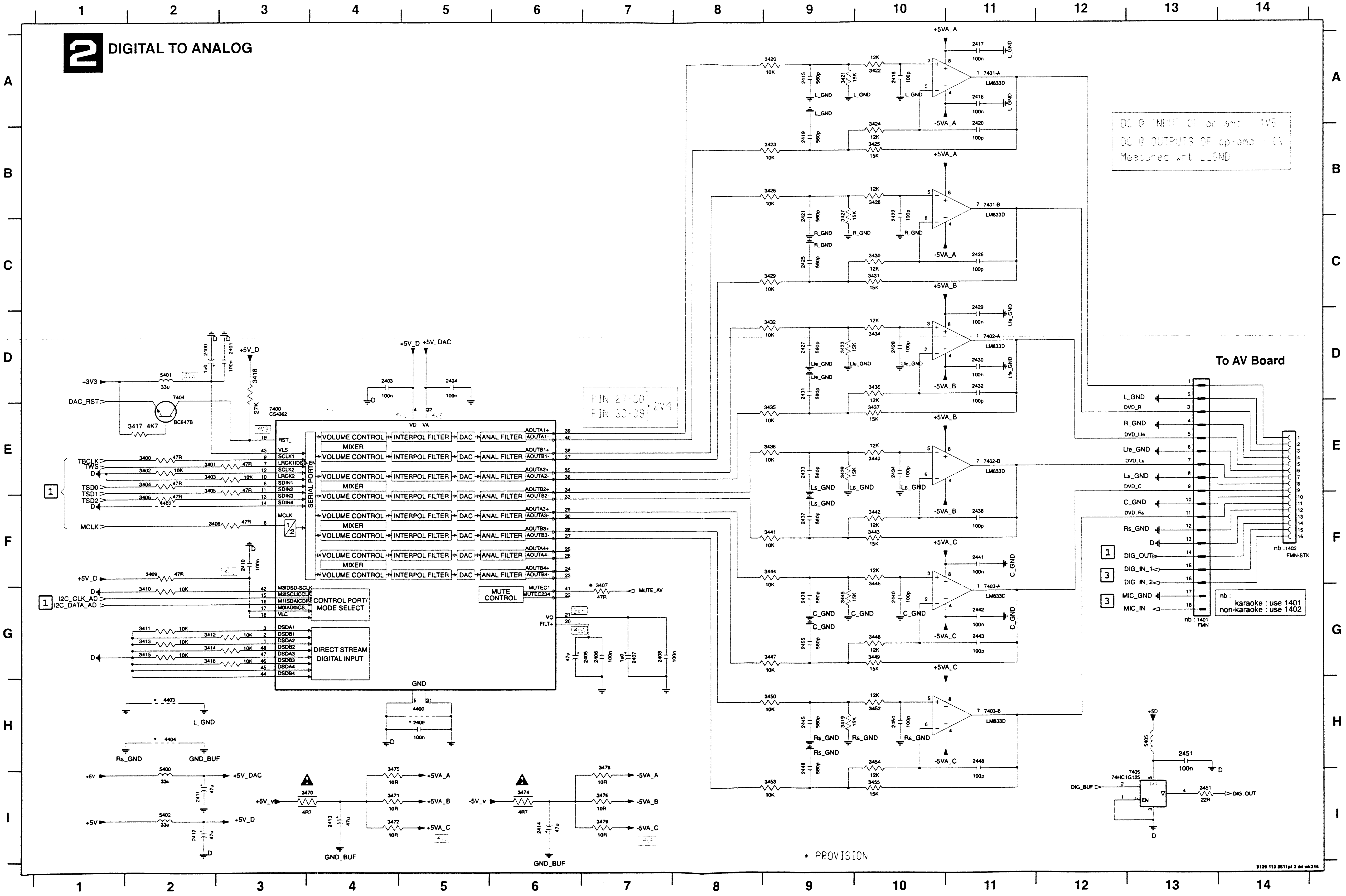
CIRCUIT DIAGRAM 1

1300	C14
1301	I10
1302	I14
1305	I8
1810	I1
1811	I1
2300	B1
2301	B1
2302	A4
2303	A4
2304	B4
2305	B4
2306	A8
2307	A8
2308	A8
2309	B8
2310	B8
2311	B8
2312	B8
2313	B9
2315	D9
2316	D9
2317	D9
2318	D10
2319	D10
2320	D11
2321	A9
2322	A10
2323	E3
2330	I12
2331	H10
2332	H10
2334	H10
2335	H11
2336	H11
2337	H11
2338	H11
2339	E13
2340	A4
2341	A4
2342	A4
2343	A5
2344	A5
2345	A5
2346	A5
2347	A6
2348	A6
2349	A6
2350	A7
2351	A7
2352	A7
2353	A7
2354	A8
2355	A8
2356	A8
2357	I8
2358	I8
2359	I9
2361	B14
2362	D12
2363	D12
2364	D12
2365	D12
3300	A3
3301	B5
3302	B9
3303	B9
3304	B9
3305	B10
3306	B10
3307	B10
3308	B10
3309	B8
3311	B10
3314	D8
3315	D9
3316	D9
3317	D10
3318	D10
3319	D11
3320	E8
3321	E9
3322	E8
3323	E8
3324	E9
3325	E8
3326	E9
3327	E8
3328	E9
3329	E8
3330	E9
3331	F8
3332	F9
3333	F8
3334	F9
3335	F8
3336	F9
3337	F8
3338	F9
3339	F8
3340	F9
3345	H9
3346	H8
3347	I8
3350	I10
3351	I11
3352	H8
3353	G9
3354	H8
3355	H8
3362	B12
3364	B12
3366	B13
3367	A14
3368	B13
3369	B14
3370	B13
3371	I4
3372	I5
3373	C11
4301	A11
4302	A11
4303	C4
4304	C4
4305	A11
4310	I9
4810	I1
4811	I1
4812	I1
4813	H2
5300	A5
5301	A5
5302	D11
5303	D11
5304	D11
5305	D11
5306	B1
5307	F10
5310	H9
7300	B2
7301	A3
7302	E6
7304	I11
7305	A9
7310	I5
7362	B13
7810	F1

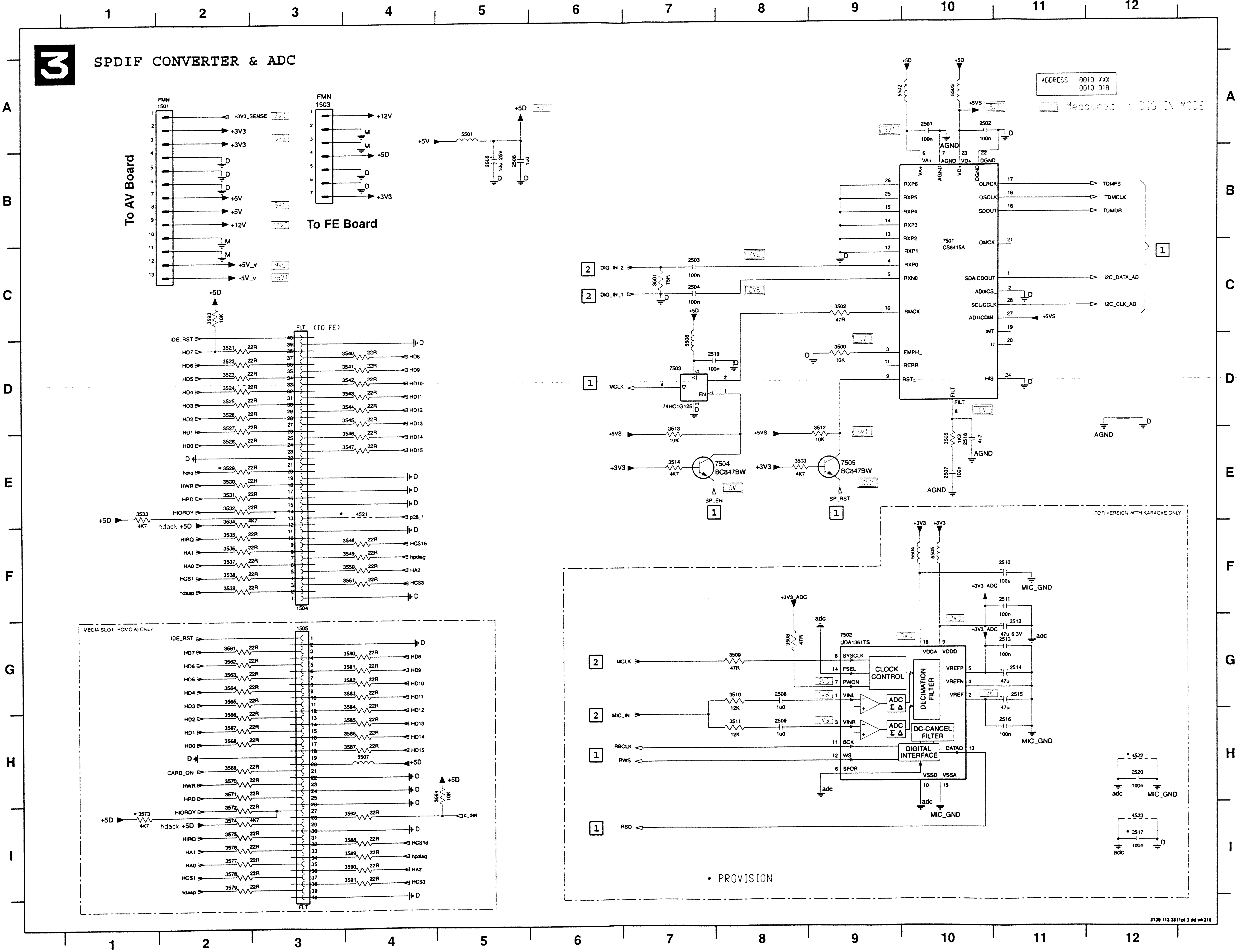

1
DVD PROCESSOR
7300
M29F800AT
7301
NCP301LSN45
RESET
7302
ES 6018 (NON P-SCAN)
OR ES 6028 (P-SCAN)
7305
LF27CDT
PSCAN : USE 3303/5/7
NON PSCAN : USE 3302/4/6
for 'pm' (scart) version only
7362
BC847BW
FMN 1300
To AV Board
7303
K4S641632F
BANK SELECT
ADDRESS REGISTER
TIMING REGISTER
ROW BUFFER REFRESH COUNTER
ROW DECODER
COL. BUFFER
DATA INPUT REGISTER
I/O CONTROL
SENSE AMP
COLUMN DECODER
LATENCY & BURST LENGTH
PROGRAMMING REGISTER
OUTPUT BUFFER
7810
AM29F040B
1810 EH-B
1811 EH-B
7310
BC847BW
1305
CX-11F 27MHz
FMN 1301
To 5DTC Control
7304
M24C01
FMN 1302
To Front Display
• PROVISION
& KARAOKE ONLY
@ media slot onlly
# LAB USE ONLY ONLY
/ 4M ROM
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
13
14
3139 113 3611pt 3 dd wk316

CIRCUIT DIAGRAM 2

1401	G13
1402	F14
2400	D2
2401	D3
2403	D4
2404	D5
2405	G7
2406	G7
2407	G7
2408	G7
2409	H5
2410	F3
2411	I2
2412	I2
2413	I4
2414	I6
2415	A9
2416	A10
2417	A11
2418	A11
2419	B9
2420	B11
2421	B9
2422	B10
2425	C9
2426	C11
2427	D9
2428	D10
2429	D11
2430	D11
2431	D9
2432	D11
2433	E9
2434	E10
2437	F9
2438	F11
2439	G9
2440	G10
2441	F11
2442	G11
2443	G11
2445	H9
2446	H9
2448	H11
2451	H13
2454	H10
2455	G9
3400	E2
3401	E2
3402	E2
3403	E2
3404	E2
3405	E2
3406	F2
3407	G7
3408	F2
3409	F2
3410	G2
3411	G2
3412	G2
3413	G2
3414	G2
3415	G2
3416	G2
3417	E2
3418	D3
3419	H9
3420	A9
3421	A9
3422	A10
3423	B9
3424	B10
3425	B10
3426	B9
3427	B9
3428	B10
3429	C9
3430	C10
3431	C10
3432	D9
3433	D9
3434	D10
3435	E9
3436	D10
3437	E10
3438	E9
3439	E9
3440	E10
3441	F9
3442	F10
3443	F10
3444	F9
3445	G9
3446	F10
3447	G9
3448	G10
3449	G10
3450	H9
3451	I13
3452	H10
3453	I9
3454	H10
3455	I10
3470	I4
3471	I4
3472	I4
3474	I6
3475	I4
3476	I7
3478	H7
3479	I7
4400	H5
4402	F2
4403	H2
4404	H2
5400	I2
5401	D2
5402	I2
5405	H13
7401-A	A11
7401-B	B11
7402-A	D11
7402-B	E11
7403-A	G11
7403-B	H11
7404	D2
7405	I13


2 DIGITAL TO ANALOG
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I
7400
CS4362
SERIAL PORT
VOLUME CONTROL
MIXER
INTERPOL FILTER
DAC
ANAL FILTER
CONTROL PORT/ MODE SELECT
DIRECT STREAM DIGITAL INPUT
MUTE CONTROL
VD VA
GND
RST_
VLS
SCLK1
LRCK1IDSD-EN
SCLK2
LRCK2
SDIN1
SDIN2
SDIN3
SDIN4
MCLK
M3IDSD-SCLK
M2ISCLICCLK
M1ISDAICDIN
M0IAD0ICS_
VLC
DSDA1
DSDB1
DSDA2
DSDB2
DSDA3
DSDB3
DSDA4
DSDB4
AOUTA1+
AOUTA1-
AOUTB1+
AOUTB1-
AOUTA2+
AOUTA2-
AOUTB2+
AOUTB2-
AOUTA3+
AOUTA3-
AOUTB3+
AOUTB3-
AOUTA4+
AOUTA4-
AOUTB4+
AOUTB4-
MUTEC1
MUTEC234
VQ
FILT+
+3V3
DAC_RST
TBCLK
TWS
TSD0
TSD1
TSD2
MCLK
I2C_CLK_AD
I2C_DATA_AD
+5V_D
+5V_DAC
MUTE_AV
BC847B
7401-A
7401-B
7402-A
7402-B
7403-A
7403-B
LM833D
+5VA_A
-5VA_A
+5VA_B
-5VA_B
+5VA_C
-5VA_C
L_GND
R_GND
Lfe_GND
Ls_GND
C_GND
Rs_GND
GND_BUF
+5V_v
-5V_v
To AV Board
DVD_R
DVD_Lfe
DVD_Ls
DVD_C
DVD_Rs
DIG_OUT
DIG_IN_1
DIG_IN_2
MIC_GND
MIC_IN
nb : karaoke : use 1401 non-karaoke : use 1402
nb : 1401 FMN
nb : 1402 FMN-STK
7405
74HC1G125
DIG_BUF
DIG_OUT
EN
DC @ INPUT OF op-amp : 1V5
DC @ OUTPUTS OF op-amp : 0V
Measured wrt L_GND
PIN 27-30
PIN 33-39
2V4
4V5
4V6
• PROVISION
3139 113 3511pt 3 dd wk316

CIRCUIT DIAGRAM 3


3
SPDIF CONVERTER & ADC
1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H I
FMN 1501
To AV Board
-3V3_SENSE
+3V3
+5V
+12V
+5V_v
-5V_v
FMN 1503
To FE Board
+12V
+5D
+3V3
+5V
5501
2505 10u 25V
2506 1u0
FLT (TO FE)
1504
IDE_RST
HD0 HD1 HD2 HD3 HD4 HD5 HD6 HD7
HD8 HD9 HD10 HD11 HD12 HD13 HD14 HD15
hdrq
HWR
HRD
HIORDY
hdack
HIRQ
HA1
HA0
HCS1
hdasp
HCS16
hpdiag
HA2
HCS3
p28_1
4521
22R
4K7
10K
MEDIA SLOT (PCMCIA) ONLY
1505
CARD_ON
c_det
5507
DIG_IN_2
DIG_IN_1
2503 100n
2504 100n
3501 75R
MCLK
7503
74HC1G125
EN
2519 100n
5506
3513 10K
3514 4K7
7504 BC847BW
SP_EN
3512 10K
3503 4K7
7505 BC847BW
SP_RST
3502 47R
3500 10K
+5VS
+3V3
5502
5503
2501 100n
2502 100n
AGND
7501
CS8415A
VA+ AGND VD+ DGND
RXP6 RXP5 RXP4 RXP3 RXP2 RXP1 RXP0 RXN0
RMCK
EMPH_
RERR
RST_
FILT
OLRCK
OSCLK
SDOUT
OMCK
SDA/CDOUT
AD0/CS_
SCL/CCLK
AD1/CDIN
INT
U
H/S
TDMFS
TDMCLK
TDMDR
I2C_DATA_AD
I2C_CLK_AD
3505 1K2
2518 4n7
2507 100n
ADDRESS : 0010 XXX
: 0010 010
Measured in DIG IN MODE
FOR VERSION WITH KARAOKE ONLY
5504
5505
2510 100u
MIC_GND
+3V3_ADC
adc
3508 47R
3509 47R
7502
UDA1361TS
SYSCLK
FSEL
PWON
VINL
VINR
BCK
WS
SFOR
VDDA VDDD
VREFP
VREFN
VREF
DATAO
VSSD VSSA
CLOCK CONTROL
DECIMATION FILTER
ADC Σ Δ
DC-CANCEL FILTER
DIGITAL INTERFACE
MIC_IN
3510 12K
3511 12K
2508 1u0
2509 1u0
RBCLK
RWS
RSD
2511 100n
2512 47u 6.3V
2513 100n
2514 47u
2515 47u
2516 100n
4522
2520 100n
4523
2517 100n
• PROVISION
3139 113 3511pt 3 dd wk316

1501	A2
1503	A3
1504	F3
1505	G3
2501	A10
2502	A10
2503	C7
2504	C7
2505	B5
2506	B5
2507	E10
2508	G8
2509	H8
2510	F11
2511	F11
2512	G11
2513	G11
2514	G11
2515	G11
2516	H11
2517	I12
2518	E10
2519	D7
2520	H12
3500	D9
3501	C7
3502	C9
3503	E8
3505	E10
3508	G8
3509	G8
3510	G8
3511	H8
3512	E9
3513	E7
3514	E7
3521	D2
3522	D2
3523	D2
3524	D2
3525	D2
3526	D2
3527	D2
3528	E2
3529	E2
3530	E2
3531	E2
3532	E2
3533	E1
3534	E2
3535	F2
3536	F2
3537	F2
3538	F2
3539	F2
3540	D4
3541	D4
3542	D4
3543	D4
3544	D4
3545	D4
3546	E4
3547	E4
3548	F4
3549	F4
3550	F4
3551	F4
3561	G2
3562	G2
3563	G2
3564	G2
3565	G2
3566	H2
3567	H2
3568	H2
3569	H2
3570	H2
3571	H2
3572	I2
3573	I1
3574	I2
3575	I2
3576	I2
3577	I2
3578	I2
3579	I2
3580	G4
3581	G4
3582	G4
3583	G4
3584	G4
3585	H4
3586	H4
3587	H4
3588	I4
3589	I4
3590	I4
3591	I4
3592	I4
3593	C2
3594	H5
4521	E4
4522	H12
4523	I12
5501	A5
5502	A9
5503	A10
5504	F10
5505	F10
5506	D7
5507	H4
7501	C10
7502	G9
7503	D7
7504	E7
7505	E9

ELECTRICAL PARTS LIST - MONO-BE BOARD

MISCELLANEOUS

	3139 118 56481	Mono BE Board Assy CD222 P
	3139 118 56471	Mono BE Board Assy CD222 PM
	3139 118 56461	Mono BE Board Assy CD222 PMK
1300	2422 025 16587	Flex Socket 10P
1301	2422 025 16988	Flex Socket 8P
1302	2422 025 16792	Flex Socket 4P
1305	2422 543 01137	X'tal Resonator 27MHz
1401	2422 025 17196	Flex Socket 18P
1402	4822 267 11028	Flex Socket 16P
1501	2422 025 16591	Flex Socket 13P
1503	2422 025 17367	Flex Socket 7P
1504	2422 025 17763	Flex Socket 40P
1505	2422 025 17763	Flex Socket 40P

CAPACITORS

2300	2238 586 59812	100nF +80/-20% 50V
2301	4822 124 21732	10uF 20% 25V
2302	2238 586 59812	100nF +80/-20% 50V
2303	4822 124 21732	10uF 20% 25V
2304	2238 586 59812	100nF +80/-20% 50V
2305	4822 124 21732	10uF 20% 25V
2306	2238 586 59812	100nF +80/-20% 50V
2307	2238 586 59812	100nF +80/-20% 50V
2308	2238 586 59812	100nF +80/-20% 50V
2309	2238 586 59812	100nF +80/-20% 50V
2310	2238 586 59812	100nF +80/-20% 50V
2311	4822 124 21732	10uF 20% 25V
2312	4822 122 33752	15pF 5% 50V
2313	4822 122 33761	22pF 5% 50V
2315	2238 586 59812	100nF +80/-20% 50V
2316	2238 586 59812	100nF +80/-20% 50V
2317	2020 552 94427	100pF 5% 50V
2318	2020 552 94427	100pF 5% 50V
2319	2020 552 94427	100pF 5% 50V
2320	2020 552 94427	100pF 5% 50V
2321	3198 017 44740	470nF 10V
2322	3198 017 44740	470nF 10V
2330	2238 586 59812	100nF +80/-20% 50V
2331	2238 586 59812	100nF +80/-20% 50V
2332	2238 586 59812	100nF +80/-20% 50V
2334	2238 586 59812	100nF +80/-20% 50V
2335	2238 586 59812	100nF +80/-20% 50V
2336	2238 586 59812	100nF +80/-20% 50V
2337	4822 124 21732	10uF 20% 25V
2338	4822 124 21732	10uF 20% 25V
2339	4822 122 33752	15pF 5% 50V
2340	2238 586 59812	100nF +80/-20% 50V
2341	2238 586 59812	100nF +80/-20% 50V
2342	2238 586 59812	100nF +80/-20% 50V
2343	2238 586 59812	100nF +80/-20% 50V
2344	2238 586 59812	100nF +80/-20% 50V
2345	2238 586 59812	100nF +80/-20% 50V
2346	2238 586 59812	100nF +80/-20% 50V
2347	2238 586 59812	100nF +80/-20% 50V
2348	2238 586 59812	100nF +80/-20% 50V
2349	2238 586 59812	100nF +80/-20% 50V
2350	2238 586 59812	100nF +80/-20% 50V
2351	2238 586 59812	100nF +80/-20% 50V
2352	2238 586 59812	100nF +80/-20% 50V
2353	2238 586 59812	100nF +80/-20% 50V
2354	4822 124 21732	10uF 20% 25V
2355	4822 124 21732	10uF 20% 25V
2356	4822 124 21732	10uF 20% 25V
2357	4822 122 33741	10pF 10% 50V
2358	4822 122 33741	10pF 10% 50V
2361	3198 017 42230	22nF 50V
2362	4822 126 14226	82pF 5% 50V
2363	4822 126 14226	82pF 5% 50V
2364	4822 126 14226	82pF 5% 50V
2365	4822 126 14226	82pF 5% 50V
2400	4822 124 22651	1uF 20% 50V
2401	2238 586 59812	100nF +80/-20% 50V
2403	2238 586 59812	100nF +80/-20% 50V
2404	2238 586 59812	100nF +80/-20% 50V
2405	4822 124 80483	47uF 20% 6,3V
2406	2238 586 59812	100nF +80/-20% 50V
2407	4822 124 22651	1uF 20% 50V
2408	2238 586 59812	100nF +80/-20% 50V
2410	2238 586 59812	100nF +80/-20% 50V
2411	4822 124 80483	47uF 20% 6,3V
2412	4822 124 80483	47uF 20% 6,3V
2413	4822 124 80483	47uF 20% 6,3V
2414	4822 124 80483	47uF 20% 6,3V
2415	4822 126 14249	560pF 10% 50V
2416	2020 552 94427	100pF 5% 50V
2417	2238 586 59812	100nF +80/-20% 50V
2418	2238 586 59812	100nF +80/-20% 50V
2419	4822 126 14249	560pF 10% 50V
2420	2020 552 94427	100pF 5% 50V
2421	4822 126 14249	560pF 10% 50V
2422	2020 552 94427	100pF 5% 50V
2425	4822 126 14249	560pF 10% 50V
2426	2020 552 94427	100pF 5% 50V
2427	4822 126 14249	560pF 10% 50V
2428	2020 552 94427	100pF 5% 50V
2429	2238 586 59812	100nF +80/-20% 50V
2430	2238 586 59812	100nF +80/-20% 50V
2431	4822 126 14249	560pF 10% 50V
2432	2020 552 94427	100pF 5% 50V
2433	4822 126 14249	560pF 10% 50V
2434	2020 552 94427	100pF 5% 50V
2437	4822 126 14249	560pF 10% 50V
2438	2020 552 94427	100pF 5% 50V
2439	4822 126 14249	560pF 10% 50V

2440	2020 552 94427	100pF 5% 50V
2441	2238 586 59812	100nF +80/-20% 50V
2442	2238 586 59812	100nF +80/-20% 50V
2443	2020 552 94427	100pF 5% 50V
2445	4822 126 14249	560pF 10% 50V
2446	4822 126 14249	560pF 10% 50V
2448	2020 552 94427	100pF 5% 50V
2451	2238 586 59812	100nF +80/-20% 50V
2454	2020 552 94427	100pF 5% 50V
2455	4822 126 14249	560pF 10% 50V
2501	2238 586 59812	100nF +80/-20% 50V
2502	2238 586 59812	100nF +80/-20% 50V
2503	2238 586 59812	100nF +80/-20% 50V
2504	2238 586 59812	100nF +80/-20% 50V
2505	4822 124 21732	10uF 20% 25V
2506	3198 017 41050	1uF 10V
2507	2238 586 59812	100nF +80/-20% 50V
2508	3198 017 41050	1uF 10V
2509	3198 017 41050	1uF 10V
2510	4822 124 42234	100uF 20% 6,3V
2511	2238 586 59812	100nF +80/-20% 50V
2512	4822 124 80483	47uF 20% 6,3V
2513	2238 586 59812	100nF +80/-20% 50V
2514	4822 124 80483	47uF 20% 6,3V
2515	4822 124 80483	47uF 20% 6,3V
2516	2238 586 59812	100nF +80/-20% 50V
2518	4822 126 13193	4,7nF 10% 63V
2519	2238 586 59812	100nF +80/-20% 50V
2520	2238 586 59812	100nF +80/-20% 50V

RESISTORS

3300	4822 051 30222	2k2 5% 0,062W
3301	4822 051 30472	4k7 5% 0,062W
3303	4822 051 30472	4k7 5% 0,062W
3305	4822 051 30472	4k7 5% 0,062W
3307	4822 051 30472	4k7 5% 0,062W
3309	4822 051 30339	33R 5% 0,062W
3311	4822 051 30472	4k7 5% 0,062W
3315	4822 051 30271	270R 5% 0,062W
3316	4822 051 30759	75R 5% 0,062W
3317	4822 051 30759	75R 5% 0,062W
3318	4822 051 30759	75R 5% 0,062W
3319	4822 051 30759	75R 5% 0,062W
3320	4822 051 30339	33R 5% 0,062W
3321	4822 051 30339	33R 5% 0,062W
3322	4822 051 30689	68R 5% 0,063W
3323	4822 051 30339	33R 5% 0,062W
3324	4822 051 30339	33R 5% 0,062W
3325	4822 051 30339	33R 5% 0,062W
3326	4822 051 30339	33R 5% 0,062W
3327	4822 051 30339	33R 5% 0,062W
3328	4822 051 30339	33R 5% 0,062W
3329	4822 051 30109	10R 5% 0,062W
3330	4822 051 30109	10R 5% 0,062W
3331	4822 051 30109	10R 5% 0,062W
3332	4822 051 30109	10R 5% 0,062W
3333	4822 051 30109	10R 5% 0,062W
3334	4822 051 30109	10R 5% 0,062W
3335	4822 051 30109	10R 5% 0,062W
3336	4822 051 30109	10R 5% 0,062W
3337	4822 051 30109	10R 5% 0,062W
3338	4822 051 30109	10R 5% 0,062W
3339	4822 051 30109	10R 5% 0,062W
3340	4822 051 30109	10R 5% 0,062W
3346	4822 117 13632	100k 1% 0,62W
3347	4822 051 30689	68R 5% 0,063W
3350	4822 051 30102	1k 5% 0,062W
3351	4822 051 30102	1k 5% 0,062W
3352	4822 051 30109	10R 5% 0,062W
3353	4822 051 30109	10R 5% 0,062W
3354	4822 051 30109	10R 5% 0,062W
3355	4822 051 30479	47R 5% 0,062W
3364	4822 051 30183	18k 5% 0,062W
3366	4822 051 30103	10k 5% 0,062W
3367	4822 051 30102	1k 5% 0,062W
3368	4822 051 30102	1k 5% 0,062W
3369	4822 051 30221	220R 5% 0,062W
3370	4822 051 30333	33k 5% 0,062W
3371	4822 051 30472	4k7 5% 0,062W
3372	4822 051 30103	10k 5% 0,062W
3373	4822 051 30102	1k 5% 0,062W
3400	4822 051 30479	47R 5% 0,062W
3401	4822 051 30479	47R 5% 0,062W
3402	4822 051 30103	10k 5% 0,062W
3403	4822 051 30103	10k 5% 0,062W
3404	4822 051 30479	47R 5% 0,062W
3405	4822 051 30479	47R 5% 0,062W
3406	4822 051 30479	47R 5% 0,062W
3408	4822 051 30479	47R 5% 0,062W
3409	4822 051 30479	47R 5% 0,062W
3410	4822 051 30103	10k 5% 0,062W
3411	4822 051 30103	10k 5% 0,062W
3412	4822 051 30103	10k 5% 0,062W
3413	4822 051 30103	10k 5% 0,062W
3414	4822 051 30103	10k 5% 0,062W
3415	4822 051 30103	10k 5% 0,062W
3416	4822 051 30103	10k 5% 0,062W
3417	4822 051 30472	4k7 5% 0,062W
3418	4822 051 30273	27k 5% 0,062W
3419	4822 051 30153	15k 5% 0,062W
3420	4822 051 30103	10k 5% 0,062W
3421	4822 051 30153	15k 5% 0,062W
3422	4822 051 30123	12k 5% 0,062W
3423	4822 051 30103	10k 5% 0,062W

ELECTRICAL PARTS LIST - MONO-BE BOARD

RESISTORS

3424	4822 051 30123	12k 5% 0,062W
3425	4822 051 30153	15k 5% 0,062W
3426	4822 051 30103	10k 5% 0,062W
3427	4822 051 30153	15k 5% 0,062W
3428	4822 051 30123	12k 5% 0,062W
3429	4822 051 30103	10k 5% 0,062W
3430	4822 051 30123	12k 5% 0,062W
3431	4822 051 30153	15k 5% 0,062W
3432	4822 051 30103	10k 5% 0,062W
3433	4822 051 30153	15k 5% 0,062W
3434	4822 051 30123	12k 5% 0,062W
3435	4822 051 30103	10k 5% 0,062W
3436	4822 051 30123	12k 5% 0,062W
3437	4822 051 30153	15k 5% 0,062W
3438	4822 051 30103	10k 5% 0,062W
3439	4822 051 30153	15k 5% 0,062W
3440	4822 051 30123	12k 5% 0,062W
3441	4822 051 30103	10k 5% 0,062W
3442	4822 051 30123	12k 5% 0,062W
3443	4822 051 30153	15k 5% 0,062W
3444	4822 051 30103	10k 5% 0,062W
3445	4822 051 30153	15k 5% 0,062W
3446	4822 051 30123	12k 5% 0,062W
3447	4822 051 30103	10k 5% 0,062W
3448	4822 051 30123	12k 5% 0,062W
3449	4822 051 30153	15k 5% 0,062W
3450	4822 051 30103	10k 5% 0,062W
3451	4822 117 12139	22R 5% 0,062W
3452	4822 051 30123	12k 5% 0,062W
3453	4822 051 30103	10k 5% 0,062W
3454	4822 051 30123	12k 5% 0,062W
3455	4822 051 30153	15k 5% 0,062W
3470	4822 052 10478	4R7 5% 0,33W
3471	4822 051 30109	10R 5% 0,062W
3472	4822 051 30109	10R 5% 0,062W
3474	4822 052 10478	4R7 5% 0,33W
3475	4822 051 30109	10R 5% 0,062W
3476	4822 051 30109	10R 5% 0,062W
3478	4822 051 30109	10R 5% 0,062W
3479	4822 051 30109	10R 5% 0,062W
3500	4822 051 30103	10k 5% 0,062W
3501	4822 051 30759	75R 5% 0,062W
3502	4822 051 30479	47R 5% 0,062W
3503	4822 051 30472	4k7 5% 0,062W
3505	4822 117 11817	1k2 1% 1/16W
3508	4822 051 30479	47R 5% 0,062W
3509	4822 051 30479	47R 5% 0,062W
3510	4822 051 30123	12k 5% 0,062W
3511	4822 051 30123	12k 5% 0,062W
3512	4822 051 30103	10k 5% 0,062W
3513	4822 051 30103	10k 5% 0,062W
3514	4822 051 30472	4k7 5% 0,062W
3521	4822 117 12139	22R 5% 0,062W
3522	4822 117 12139	22R 5% 0,062W
3523	4822 117 12139	22R 5% 0,062W
3524	4822 117 12139	22R 5% 0,062W
3525	4822 117 12139	22R 5% 0,062W
3526	4822 117 12139	22R 5% 0,062W
3527	4822 117 12139	22R 5% 0,062W
3528	4822 117 12139	22R 5% 0,062W
3530	4822 117 12139	22R 5% 0,062W
3531	4822 117 12139	22R 5% 0,062W
3532	4822 117 12139	22R 5% 0,062W
3533	4822 051 30472	4k7 5% 0,062W
3534	4822 051 30472	4k7 5% 0,062W
3535	4822 117 12139	22R 5% 0,062W
3536	4822 117 12139	22R 5% 0,062W
3537	4822 117 12139	22R 5% 0,062W
3538	4822 117 12139	22R 5% 0,062W
3539	4822 117 12139	22R 5% 0,062W
3540	4822 117 12139	22R 5% 0,062W
3541	4822 117 12139	22R 5% 0,062W
3542	4822 117 12139	22R 5% 0,062W
3543	4822 117 12139	22R 5% 0,062W
3544	4822 117 12139	22R 5% 0,062W
3545	4822 117 12139	22R 5% 0,062W
3546	4822 117 12139	22R 5% 0,062W
3547	4822 117 12139	22R 5% 0,062W
3548	4822 117 12139	22R 5% 0,062W
3549	4822 117 12139	22R 5% 0,062W
3550	4822 117 12139	22R 5% 0,062W
3551	4822 117 12139	22R 5% 0,062W
3561	4822 117 12139	22R 5% 0,062W
3562	4822 117 12139	22R 5% 0,062W
3563	4822 117 12139	22R 5% 0,062W
3564	4822 117 12139	22R 5% 0,062W
3565	4822 117 12139	22R 5% 0,062W
3566	4822 117 12139	22R 5% 0,062W
3567	4822 117 12139	22R 5% 0,062W
3568	4822 117 12139	22R 5% 0,062W
3569	4822 117 12139	22R 5% 0,062W
3570	4822 117 12139	22R 5% 0,062W
3571	4822 117 12139	22R 5% 0,062W
3572	4822 117 12139	22R 5% 0,062W
3574	4822 051 30472	4k7 5% 0,062W
3575	4822 117 12139	22R 5% 0,062W
3576	4822 117 12139	22R 5% 0,062W
3577	4822 117 12139	22R 5% 0,062W
3578	4822 117 12139	22R 5% 0,062W
3579	4822 117 12139	22R 5% 0,062W
3580	4822 117 12139	22R 5% 0,062W
3581	4822 117 12139	22R 5% 0,062W
3582	4822 117 12139	22R 5% 0,062W
3583	4822 117 12139	22R 5% 0,062W
3584	4822 117 12139	22R 5% 0,062W
3585	4822 117 12139	22R 5% 0,062W
3586	4822 117 12139	22R 5% 0,062W
3587	4822 117 12139	22R 5% 0,062W
3588	4822 117 12139	22R 5% 0,062W
3589	4822 117 12139	22R 5% 0,062W
3590	4822 117 12139	22R 5% 0,062W
3591	4822 117 12139	22R 5% 0,062W
3592	4822 117 12139	22R 5% 0,062W
3593	4822 051 30103	10k 5% 0,062W
3594	4822 051 30103	10k 5% 0,062W
4301	4822 051 30008	0R Jumper 0603
4302	4822 051 30008	0R Jumper 0603
4304	4822 051 30008	0R Jumper 0603
4305	4822 051 30008	0R Jumper 0603
4310	4822 051 30008	0R Jumper 0603
4400	4822 051 30008	0R Jumper 0603
4402	4822 051 30008	0R Jumper 0603
4523	4822 051 30008	0R Jumper 0603

COILS & FILTERS

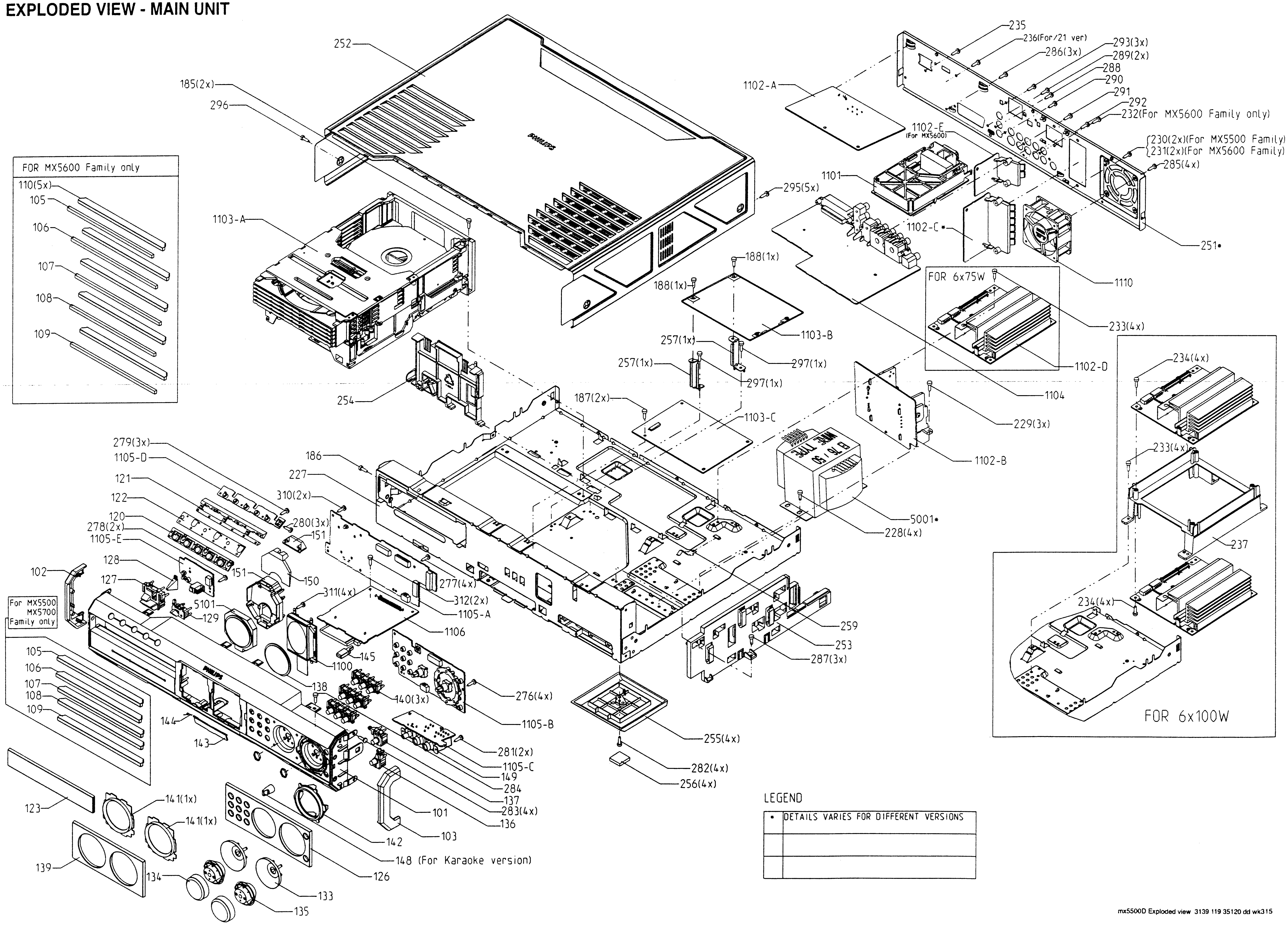
5300	4822 157 11499	Ind EMI 100MHz 60R
5301	4822 157 11499	Ind EMI 100MHz 60R
5302	4822 157 70299	Coil 2,2uH
5303	4822 157 70299	Coil 2,2uH
5304	4822 157 70299	Coil 2,2uH
5305	4822 157 70299	Coil 2,2uH
5306	4822 157 71206	Ind EMI 100MHz 600R
5307	4822 157 71206	Ind EMI 100MHz 600R
5400	3198 018 63390	Coil 33uH 5%
5401	3198 018 63390	Coil 33uH 5%
5402	3198 018 63390	Coil 33uH 5%
5405	4822 157 71206	Ind EMI 100MHz 600R
5501	4822 157 11716	Ind EMI 100MHz 30R
5502	4822 157 11716	Ind EMI 100MHz 30R
5503	4822 157 11716	Ind EMI 100MHz 30R
5504	4822 157 11716	Ind EMI 100MHz 30R
5505	4822 157 11716	Ind EMI 100MHz 30R
5506	4822 157 11716	Ind EMI 100MHz 30R
5507	2422 549 43062	IND FXD SM EMI 100MHZ 600R

TRANSISTORS & INTEGRATED CIRCUITS

7300	9965 000 18637	M29F800DT-70N1 with SW program
7301	9322 163 27685	NCP301LSN45
7302	9322 185 43671	ES6028F
7303	9322 178 78668	K4S641632F-TC70
7304	9965 000 04931	M24C01-WMN6
7305	9322 178 32668	LF27CDT
7310	3198 010 42310	BC847BW
7362	3198 010 42310	BC847BW
7400	9322 177 92671	CS4362-KQ
7401	4822 209 30095	LM833D
7402	4822 209 30095	LM833D
7403	4822 209 30095	LM833D
7404	5322 130 60159	BC847B
7405	9352 456 90115	74HC1G125GW
7501	9322 185 10668	CS8415A-CZ
7502	9352 670 99118	UDA1361TS/N1
7503	9352 456 90115	74HC1G125GW
7504	3198 010 42310	BC847BW
7505	3198 010 42310	BC847BW

Note: Only the parts mentioned in this list are normal service spare parts.

EXPLODED VIEW - MAIN UNIT


252
185(2x)
296
FOR MX5600 Family only
110(5x)
105
106
107
108
109
1103-A
254
279(3x)
1105-D
121
122
120
278(2x)
1105-E
128
127
102
For MX5500
MX5700
Family only
105
106
107
108
109
123
139
134
135
133
126
148 (For Karaoke version)
142
103
101
136
283(4x)
137
284
149
1105-C
281(2x)
1105-B
276(4x)
140(3x)
138
144
143
141(1x)
141(1x)
145
1100
1106
1105-A
312(2x)
277(4x)
311(4x)
5101
129
151
151
150
280(3x)
310(2x)
227
186
187(2x)
1103-C
257(1x)
257(1x)
297(1x)
297(1x)
188(1x)
188(1x)
1103-B
295(5x)
255(4x)
282(4x)
256(4x)
287(3x)
253
259
228(4x)
5001*
1102-B
229(3x)
1104
1102-D
233(4x)
FOR 6x75W
1110
251*
1102-C*
1101
1102-E
(For MX5600)
1102-A
235
236(For/21 ver)
286(3x)
293(3x)
289(2x)
288
290
291
292
232(For MX5600 Family only)
230(2x)(For MX5500 Family)
231(2x)(For MX5600 Family)
285(4x)
234(4x)
233(4x)
237
234(4x)
FOR 6x100W
PHILIPS

LEGEND

*	DETAILS VARIES FOR DIFFERENT VERSIONS

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

101	3139 118 19351		Cabinet Front	MX5500D/21S
101	3139 118 19341		Cabinet Front	MX5500D/37
101	3139 257 50801		Cabinet Front	MX5600D/37
101	3139 257 51111		Cabinet Front	MX5700D/22S/25S
101	3139 257 51361		Cabinet Front	MX5700D/21R/21S
102	3139 118 18801		Cover Cabinet Side Left	
103	3139 118 18811		Cover Cabinet Side Right	
105	3139 118 19361		Cover Tray Disc1	MX5500D/MX5700D
105	3139 118 19961		Cover Tray Disc1	MX5600D
106	3139 118 19371		Cover Tray Disc2	MX5500D/MX5700D
106	3139 118 19771		Cover Tray Disc2	MX5600D
107	3139 118 19381		Cover Tray Disc3	MX5500D/MX5700D
107	3139 118 19981		Cover Tray Disc3	MX5600D
108	3139 118 19391		Cover Tray Disc4	MX5500D/MX5700D
108	3139 118 19991		Cover Tray Disc4	MX5600D
109	3139 118 19401		Cover Tray Disc5	MX5500D/MX5700D
109	3139 257 50001		Cover Tray Disc5	MX5600D.
110	3139 114 78491		Cover Tray 5DTC	MX5600D
120	3139 118 19441		Button Set CD Open/Close Chrome	
122	3139 113 27511		Cutsheet Shield CD Open/Close	
123	3139 118 19411		Panel Left	MX5500D/MX5700D
123	3139 257 50011		Panel Left	MX5600D
126	3139 118 19431		Panel Control	MX5500D/MX5700D
126	3139 257 50031		Panel Control	MX5600D
127	3139 118 18871		Button Set Power Eco	
128	3139 114 77041		Lightguide Power Eco Stdby	
133	3139 118 18941		Ring Ornamental	
134	3139 118 18931		Cap Knob Rotary Chrome	
135	3139 118 18921		Knob Source/Vol Rotary	
136	3139 118 19461		Button Set Bass Chrome	
137	3139 118 19471		Button Set Treble Chrome	
138	3139 257 51531		Window Display	
139	3139 118 19421		Panel Display	MX5500D/MX5700D
139	3139 257 50021		Panel Display	MX5600D
140	3139 118 19451		Button Set Ctrl Chrome	
141	3139 118 19481		Ring Orn Display	MX5500D/MX5700D
141	3139 257 50891		Ring Orn Display	MX5600D
142	3139 114 77551		Lightguide Volume	
143	3139 257 51541		Cover PCMCIA	
144	3139 111 10011		Spring Cover PCMCIA	
145	3139 257 50791		Knob Eject PCMCIA	
148	3139 257 50141		Knob Karaoke	/21R/21S
256	3139 113 27220		Foot Rubber	
259	3139 111 01470		Spring Grounding	
296	3139 110 40691		Screw Cap Hd Soc Hex Mac M5x6	
345	3139 119 00581		Satellite LS pack	MX5500D/21S
345	3139 119 00601		Satellite LS pack	not for MX5500D/21S
346	3139 119 00591		Subwoofer Box	MX5500D/21S
346	3139 119 00571		Subwoofer Box	MX5500D/37
346	3139 119 00611		Stand Subwoofer Box	MX5600D
346	3139 119 00651		Stand Subwoofer Box	MX5700D
351	4822 303 50063		FM Antenna	
352	4822 303 50082		AM Loop Antenna	
353	3139 228 61701		Remote Control RC19241001/01	
356	2422 070 98151	⚠	Mains Cord 2A5 1,5M	/21R/21S/22S
356	9965 000 07586	⚠	Mains Cord 2A5 1,5M	/25S
356	2422 070 98246	⚠	Mains Cord UL 7A 1,5M	/37
357	3139 128 73010	⚠	Adapter Plug 6A 250V	/21S
358	4822 263 21206		Cinch Cable 1,7M Yel	not for /22S/25S
361	2422 076 00374		Cinch Cable 1,5M 3P	not for /22S/25S
362	3103 308 92610		Audio Cable 1,5M	not for /22S/25S
363	2422 076 00528		Scart Cable 1,5M 21P	/22S/25S
370	3139 115 22261		Instr. For Use	MX5500D/21S
370	3139 115 22061		Instr. For Use	MX5500D/37
370	3139 115 22121		Instr. For Use	MX5600D/37
370	3139 115 22281		Instr. For Use	MX5700D/22S/25S
370	3139 115 22681		Instr. For Use	MX5700D/21R/22S
371	3139 115 22551		Instr. For Use Book 2	MX5700D/22S
1100	3139 119 00831		LCD Module MX5500D-01	
1106	3139 118 56571		PCMCIA Board	
1110	2822 031 01494		Fan 12Vdc 0,8W 3100rpm B	
5001	3139 118 32641	⚠	Mains Transfo 6x75W	MX5500D/21S
5001	3139 118 32702	⚠	Mains Transfo 6x100W	MX5600D/37
5001	3139 118 32631	⚠	Mains Transfo 6x100W	MX5700D/22S/25S
5001	3139 118 32621	⚠	Mains Transfo 6x100W	MX5700D/21R/21S
5101	3139 110 53431		VU Meter FG-PH16CATS00 Black	
8000	3139 110 35031		Flex Cable 8P 14cm AD	
8001	3139 111 02001		Flex Cable 13P 40cm BD	
8002	3139 111 02461		Flex Cable 14P 40cm AD	
8003	3139 111 02211		Flex Cable 16P 10cm AD	
8005	3139 111 02051		Flex Cable 7P 34cm AD	
8006	3139 110 34431		Flex Cable 8P 34cm AD	/21R/21S
8006	3139 110 34861		Flex Cable 4P 34cm AD	not for/21R/21S
8008	3139 111 02021		Flex Cable 4P 22cm AD	
8009	3139 111 02281		Flex Cable 40P 28cm AD	
8010	3139 111 01971		Flex Cable 18P 18cm AD	/21R/21S
8010	3139 111 02601		Flex Cable 16P 18cm AD	not for/21R/21S
8011	3139 111 02591		Flex Cable 10P 28cm AD	
8012	3139 111 02581		Flex Cable 13P 18cm AD	
8013	3139 111 02571		Flex Cable 10P 18cm BD	for 75W

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

8014	3139 111 02571	Flex Cable 10P 18cm BD
8016	3139 110 36140	Flex Cable 4P 18cm AD
8018	3139 111 02231	Flex Cable 5P 12cm AD
8025	3139 111 02401	Flex Cable 10P 22cm BD

Note: Only the parts mentioned in this list are normal service spare parts.

MECHANICAL PARTS LIST - LOUDSPEAKERS BREAKDOWN

Breakdown of Satellite LS Package (For MX5500D/21S only)

9965 000 18060	Front Speaker Box Left
9965 000 18061	Front Speaker Box Right
9965 000 18065	Center Speaker Box
9965 000 18062	Surr. Speaker Box Left
9965 000 18063	Surr. Speaker Box Right
9965 000 18064	Front/Surround Spk Front Grille Assy
9965 000 18066	Center Speaker Grille Assembly
9965 000 17046	Philips Logo
9965 000 18067	Base Plate Front/Surround Speaker
9965 000 18068	Mounting Bracket + Screw Pack

Breakdown of Satellite LS Package (Not for MX5500D/21S)

9965 000 18070	Front Speaker Box Left
9965 000 18071	Front Speaker Box Right
9965 000 18074	Center Speaker Box
9965 000 18072	Surr. Speaker Box Left
9965 000 18073	Surr. Speaker Box Right
9965 000 18064	Front/Surround Spk Front Grille Assy
9965 000 18066	Center Speaker Grille Assembly
9965 000 17046	Philips Logo
9965 000 18067	Base Plate Front/Surround Speaker
9965 000 18068	Mounting Bracket + Screw Pack

Breakdown of Subwoofer Box (For MX5500D family)

9965 000 18059	Front Metal Grille Assembly
9965 000 17046	Philips Logo

Breakdown of Subwoofer Box (For MX56../MX57.. family)

Refer to Exploded view on page 13-3

9965 000 18406	2-Pins Terminal
9965 000 18407	Locking Top
9965 000 18413	2-Spring
9965 000 18405	4" Woofer Speaker 8R 100W
9965 000 18411	4-Pins Terminal (White & Purple)
9965 000 18412	4-Pins Terminal (Red & Purple)

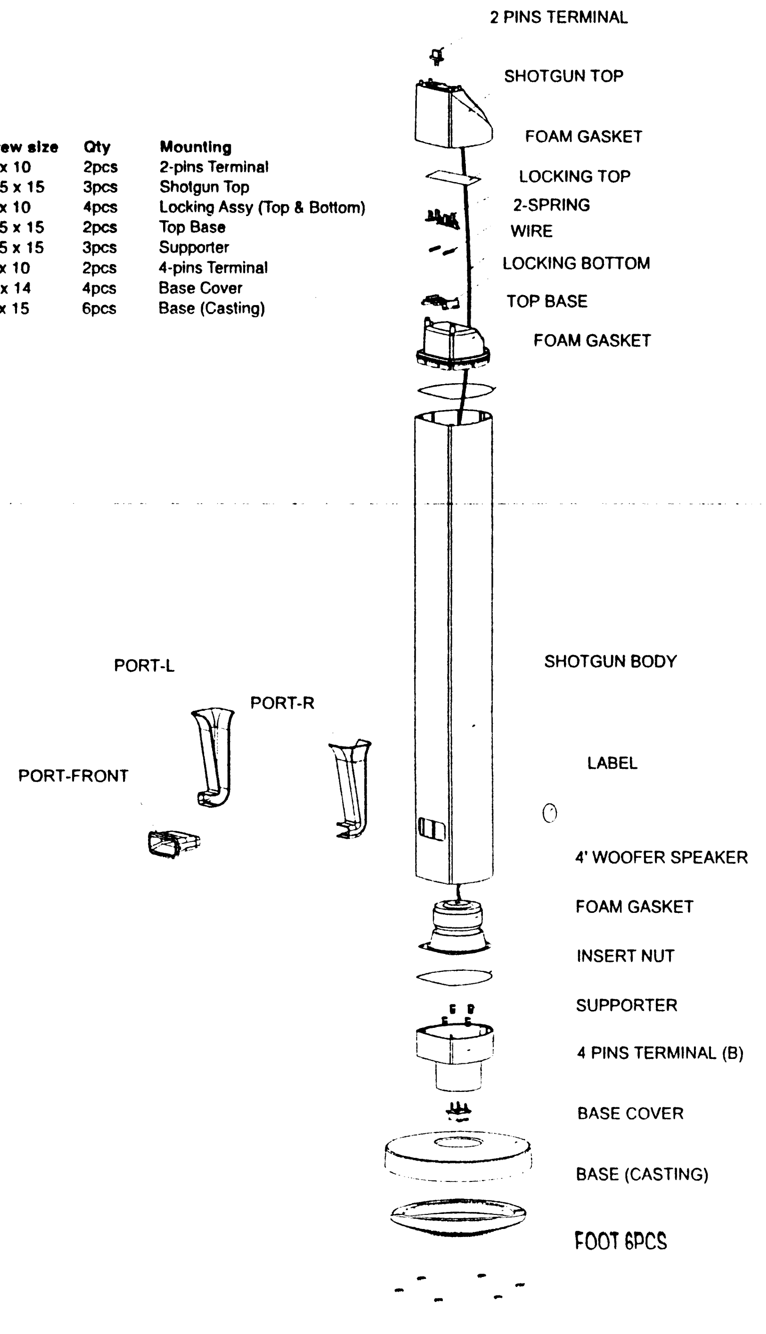
Note: Only the parts mentioned in this list are normal service spare parts.

SCREW LISTS - MAIN UNIT

185	M3 x 6	234	D3 x 10	283	M3 x 6	295	M3 x 6
186	D3 x 10	235	D3 x 10	284	M3 x 6	296	M5 x 6 Hex W/Head
187	M3 x 6	236	D3 x 10	285	D3 x 10	297	M3 x 6
188	M3 x 6	276	D3 x 10	286	M3 x 6	310	D3 x 10
228	M3 x 6	277	D3 x 10	287	M3 x 6	311	D3 x 10
229	M3 x 6	278	D3 x 10	288	D3 x 10	312	M3 x 6
230	D3 x 10	279	D2 x 8	290	D3 x 10		
231	D3 x 10	280	D2 x 8	291	D3 x 10		
232	D3 x 10	281	D2 x 8	292	D3 x 10		
233	M3 x 6	282	M3 x 6	293	D3 x 10		

EXPLODED VIEW - STAND SUBWOOFER (For MX5600D & MX5700D only)

Screw size	Qty	Mounting
D3 x 10	2pcs	2-pins Terminal
D3.5 x 15	3pcs	Shotgun Top
D3 x 10	4pcs	Locking Assy (Top & Bottom)
D3.5 x 15	2pcs	Top Base
D3.5 x 15	3pcs	Supporter
D3 x 10	2pcs	4-pins Terminal
M5 x 14	4pcs	Base Cover
D3 x 15	6pcs	Base (Casting)



DOCUMENT HISTORY

Version 1.0
- Initial release

Version 1.1
- Add MX5700D/21R, MX5700D/21S and MX5700D/25S into existing service manual
  - Pages modified: Pg 1-1 to 1-3, 6-2, 6-16 to 6-17, 8-22, 9-16 to 9-18, 13-2